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LAND MONITORING SYSTEM FEASIBILITY STUDY

Prepared for

Ministry of Housing
Canada Mortgage and Housing Corporation
Toronto Home Builders' Association
and
Urban Development Institute

by

Clayton Research Associates Limited

June, 1990

Canada Mortgage and Housing Corporation
Société canadienne d'hypothèques et de logement
Canadian Housing Information Centre
Centre canadien de documentation sur l'habitation

EXECUTIVE SUMMARY

The Ministry of Housing, Canada Mortgage and Housing Corporation, the Toronto Home Builders' Association and the Urban Development Institute (Ontario) jointly commissioned Clayton Research Associates to undertake this study of the feasibility of developing and maintaining a computerized land monitoring system within the Greater Toronto Area (GTA). As outlined in the terms of reference for the assignment, the land monitoring system should attempt to:

- Identify the supply of residential and non-residential land at various stages within the planning approvals process in each municipality, including information on the characteristics of the land such as planned and current servicing, planned unit yield, etc.
- Identify the ownership characteristics of the land within the various stages.
- Measure the anticipated/actual time frame required for land parcels to proceed through the development process.
- Utilize existing surveys and control processes to the maximum extent possible, minimizing the need for special-purpose supporting studies.

Prior to the recommendation of possible options for the development of a land monitoring system in the GTA, extensive background research was undertaken including the following:

- an analysis of the potential information that could be collected in a land monitoring system;
- a survey of potential users of this information to discuss their requirements from a potential land monitoring system;
- a review of other land monitoring systems in major centres in both Canada and the United States; and
- a review of past, current, and expected future land monitoring activities in the GTA.

Based on the findings of these analyses, three possible options for the development of a land monitoring system for the GTA have been outlined. When examining the three options for systems, it is important to recognize that there are features of any of the options which could be incorporated into other options as well. There are many more than three options available in designing a land monitoring system for the GTA - Option 3, in itself, is a series of options. What have been outlined here are a range of possibilities offering progressively more detail about the volume and characteristics of vacant land in the GTA; each option has features which could, if desired, be included in either simpler or more detailed options.

1989 SUBDIVISION ACTIVITY

	UNITS REGISTERED				UNITS DRAFT APPROVED				APPLICATIONS RECEIVED			
Halton Region Municipalities	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**
Burlington	414	36	205	911	1312	0	857	0	171	0	0	0
Halton Hills	510	0	0	0	310	0	0	0	1286	98	231	189
Milton	65	0	0	0	0	0	0	0	112	0	1	0
Oakville	835	0	82	185	205	0	0	0	323	46	69	80
TOTAL	1824	36	287	1096	1827	0	857	0	1892	144	301	269

ACTIVE PLANS OF SUBDIVISION
DECEMBER 31, 1989

	REGISTERED UNITS -NO PERMIT ISSUED				DRAFT APPROVED UNITS				UNITS IN PROCESS (RECEIVED)			
Peel Region Municipalities	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**
Brampton					3847	492	535	1688	8844	1054	3092	4464
Mississauga					6583	311	2477	2786	7863	1151	4527	11634
Caledon					1237	0	173	0	3418	340	248	70
TOTAL					*11667*	*803*	*3185*	*4474*	*20125*	*2545*	*7867*	*16168*

The analysis of potential system designs for each of the three Options outlined in this report, and the rough estimates of person-days required to set-up and operate each, have been based on the assumption that some central body, assumed to be a Ministry of the Provincial government, will act as the central coordinating body for the overall system.

Each of the three Options are summarized briefly in the text that follows.

OPTION 1: A SIMPLE SYSTEM FOR MONITORING AGGREGATE VACANT RESIDENTIAL LAND IN THE DEVELOPMENT APPROVALS PROCESS

This possible system is quite simple - yet it would provide information which would be extremely valuable for all those interested in the residential land supply situation in the GTA. It would also be relatively easy to implement. It would provide regular (possibly quarterly) information for each municipality in the GTA on the number of units by dwelling type in subdivisions at the following stages of the development approvals process:

- Registered - the units remaining unbuilt in registered plans of subdivision (i.e. for which building permits have not been issued);

- Draft approved; and

- In process - the number of units on the subdivision applications which are in the development approvals process but have not yet been draft approved or registered.

Allied with this information on the **stock** of vacant land, the system would provide information on the **flow** of land through the process; i.e. the number of units which, during the time period, were:

- Registered;
- Draft approved; and
- Submitted as applications into the development approvals process.

The information would be summarized as shown in the sample stock table for Peel (Active plans of subdivision as at Dec. 31, 1989) and flow table for Halton (1989 Subdivision Activity) on the opposite page. These tables also demonstrate that much of this information is already available from the Regions in the GTA (except in Metropolitan Toronto, where additional effort would be required to track activity in the few subdivision applications that it receives).

While relatively limited in scope, this information would provide an extremely valuable insight into the volume of residential land in the development approvals pipeline in each part of the GTA. If monitored over time, this land supply information could provide an early warning of the potential for land shortages such as have occurred in the GTA during the recent boom - and in previous boom periods as well. Also, this information would be useful in monitoring the Province's Housing Policy Statement objectives of maintaining at least a three year supply of registered and draft-approved land.

The system would require that regional municipalities provide the summaries for each municipality to the Ministry which would co-ordinate the information for the GTA. The summary report prepared by the Ministry could usefully compare the volume of building (from CMHC or building permits data) at municipal, regional and GTA levels with the supply of land available for the short-term (registered-no permit and draft approved) and medium-term (in process).

OPTION 2: A MEDIUM RANGE SYSTEM FOR MONITORING VACANT AND POTENTIAL RESIDENTIAL LAND

This possible system provides much more extensive information than Option 1 which dealt only with land in the subdivision approvals process. This more detailed system would add information on the amount of land designated for residential development but for which an application had not yet been received. Also, rather than a simple aggregation of the number of units at each stage in the approval process, this more detailed system would provide a variety of information on each parcel.

The system would provide summary information on the amount of vacant land (and potential dwelling units) at each stage of the subdivision approvals process as well as designated land for which an application has not yet been submitted. As in Option 1, it would provide summary stock and flow information on the number of units at the following stages of the subdivision approvals process:

- Registered - the units remaining unbuilt in registered plans of subdivision (i.e. for which building permits have not been issued);

- Draft approved; and

- In process - subdivision applications which are in the development approvals process but have not yet been draft approved or registered.

However, unlike Option 1, where only summary information would be produced, the following characteristics of each subdivision would be outlined:

- Subdivision size (in acres or hectares);
- Date subdivision entered each planning stage; and
- Ownership (the name of owner of the land).

This information is already being collected by the various regional planning departments (except Metro) but, under Option 1, would not be provided as part of the information generated by the Ministry for the GTA.

In addition to this basic information, Option 2 would provide summary information on the number of units available for future development on:

- Inactive, designated land - the total number of units which could be accommodated on land which is designated residential but for which an application has not yet been submitted. Unit type is not always designated in an official plan; unit potential on this land would have to be based on units per hectare as observed in comparable developed areas.

This additional information would be particularly useful in monitoring the Housing Policy Statement objective of maintaining at least a ten year supply of designated residential land.

Maps could also be provided which indicate the locations of each of the parcels, however, these would involve a great deal of additional work to complete and would probably double the cost of this option.

OPTION 3: ADD-ONS TO PROVIDE FURTHER INFORMATION FOR MONITORING VACANT AND POTENTIAL RESIDENTIAL LAND

This option describes a number of potential add-ons to the medium range system outlined as Option 2. Each of these possible add-ons could be incorporated separately and are completely independent. They are discussed briefly in the sections that follow.

Lot Sizes

Options 1 and 2 would provide information on the number of units of each dwelling type at each stage in the subdivision approval process. For analysis of the supply of land available for different sizes or prices of housing, this information would be too aggregated to be of assistance - it would cover the overall supply of land for single-detached houses, for example, but would not distinguish between land for smaller, affordable houses and larger, more expensive ones.

Data on the sizes of lots in the subdivisions at each stage of the approval process would provide this information. To obtain it, the plan for each draft approved and registered subdivision (lot sizes are not usually known before this stage) must be examined and the sizes of lots recorded. Some allowance would need to be made for odd-shaped lots as well. Depending on the degree of accuracy required, this could be a very labour-intensive task.

The output would include information on the number of lots of each size (30, 35, 40 foot frontage, etc.) at each stage of the approval process. If undertaken in concert with the previous options, the information could be compiled and updated as subdivisions are draft approved or registered. The data could therefore be produced on the same time sequence as the other data.

This information would be a useful aid in monitoring the Housing Policy Statement objective of maintaining an adequate supply of land for affordable housing, since this type of housing is generally not built on large single-detached lots.

Servicing

A major potential constraint on the development of residential land that is not covered by Option 2 is the presence of servicing constraints. Servicing constraints, particularly pipe capacity or treatment plant capacity, can often be a major factor in hindering the supply of land available for development; this in turn can lead to rising land prices and often severe affordability problems.

Identification of potential servicing constraints can be a very subjective process: it is not always obvious which parcels can be easily serviced (it may depend on servicing activity on neighbouring parcels) and when servicing will be available. As well, servicing methods and problems vary among the regions. In Halton, for example, servicing costs are paid up-front by developers, with the money recovered on a "fair share" basis as new developers enter the scheme. Under this type of scheme, if a developer is willing to put up enough money, large areas where development may have been expected can be "leap-frogged" as developers service their own property. Thus it is not always possible to determine which parcels can or will be serviced - it depends upon what developers are willing to pay.

There are a number of ways in which potential servicing problems could be examined through a land monitoring system. One possible solution to the problem of identifying possible servicing constraints is to have local planners - who have detailed knowledge of specific projects in their respective area - identify those projects which may face servicing difficulties. This could be done by asking them the following series of questions: Is this subdivision currently fully serviced? If not, do you anticipate that servicing difficulties could cause this application to be delayed? If a servicing problem is expected, what type of servicing problem is expected? This information could be compiled as each subdivision application is submitted with periodic updates for each subdivision.

CMHC Data

Another possible add-on is to incorporate CMHC data into the land monitoring system. This may assist some municipalities, which do not currently maintain an up to date inventory of building permits issued, as CMHC collects this information on a monthly basis from each of the municipalities in the GTA.

Utilization of CMHC's information would require that CMHC organize the collection of the registered plan number associated with each building permit in the future (this is currently not being done but the information is available as is the capacity to store in on CMHC's system), and that arrangements be made to have the information transferred to either the Ministry or the Regions in a machine readable format.

Parcel Specific Information On Inactive Land

The information generated on designated but inactive land in Option 2 did not provide parcel specific information, but rather a rough estimate of the net area available for residential development. A possible add-on to Option 2, then, might be to replace these rough estimates with a detailed estimate. The detailed estimate would require that all vacant parcels (over a certain minimum size) be identified and information on the exact developable area of each be gathered. Collecting this information on a parcel by parcel basis would also result in ownership information being made available for land in the inactive designated stage.

Official Plan Amendments, Rezonings, And Consents

A land monitoring system that is based on the subdivision approvals process alone would not capture a significant amount of land that is made available for residential land through other processes such as official plan amendments, rezonings, and consents. To be more comprehensive, a system would have to be developed to track these approvals.

Official plan amendments, rezonings, and consents would have to be tracked in each region at the application stage; the information collected could include unit potential (when this is known), dwelling type, ownership and land area. Currently, only two of the regions in the GTA, Durham and Halton, monitor unit potential from these activities. Thus, to get data for the GTA would require that each region begin collecting this information.

There may be potential for utilization of information in the Ministry of Municipal Affairs' proposed Housing Policy Statement Monitoring System (HPSMS), which is being designed to monitor, among many other things, housing-related official plans and amendments.

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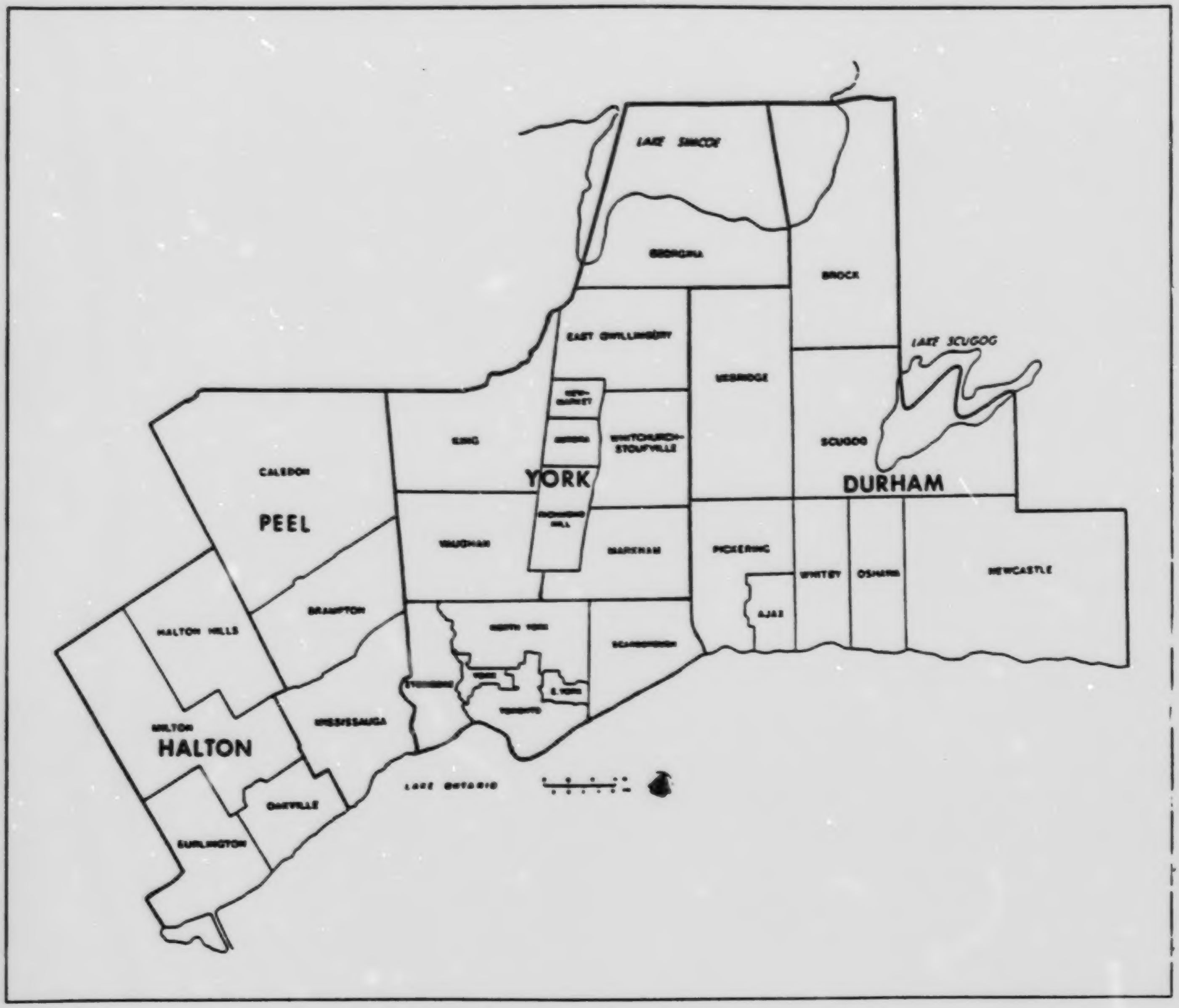
LAKE SIMCOE
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DURHAM
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AJAX
WHITBY
OSHAWA
NEWCASTLE
HALTON HILLS
BRAMPTON
NORTH YORK
SCARBOROUGH
ETOBICOKE
YORK
E. YORK
TORONTO
MISSISSAUGA
MILTON
HALTON
OAKVILLE
BURLINGTON
LAKE ONTARIO

INTRODUCTION

The Ministry of Housing, Canada Mortgage and Housing Corporation, the Toronto Home Builders' Association and the Urban Development Institute (Ontario) jointly commissioned Clayton Research Associates to undertake this study of the feasibility of developing and maintaining a computerized land monitoring system within the Greater Toronto Area (GTA).[1] As outlined in the terms of reference for the assignment, the land monitoring system should attempt to:

- Identify the supply of residential and non-residential land at various stages within the planning approvals process in each municipality, including information on the characteristics of the land such as planned and current servicing, planned unit yield, etc.
- Identify the ownership characteristics of the land within the various stages.
- Measure the anticipated/actual time frame required for land parcels to proceed through the development process.
- Utilize existing surveys and control processes to the maximum extent possible, minimizing the need for special-purpose supporting studies.

Such a system would be an extremely useful addition to the market intelligence available with respect to development trends in the GTA. Depending upon the degree of detail provided by the system, it could be used to monitor (among other things): overall volumes of land currently and potentially available for development by area within the GTA; the likely shortages of land (given recent or projected development patterns) by area and the likely timing of these shortages; the pattern of ownership of lands at various stages in the development process; the length of time it takes for land of different types to proceed through the development process; and the competitive land situation in particular municipalities (or parts of municipalities). It would be used extensively by both the private and public sectors. In particular, it would be extremely useful to municipalities in meeting the requirements of the Province's Policy Statement on Land Use Planning for Housing. It is, in short, a much-needed part of the information base required for meaningful monitoring and analysis of development trends in the GTA.

In the course of investigating the feasibility of developing a land monitoring system in the GTA, Clayton Research reviewed and analyzed the types of information which could potentially be produced by a land monitoring system as well as the actual systems in operation in other centres and in municipalities in the GTA. Finally, based on this information, a series of potential designs for a land monitoring system in the GTA were formulated and evaluated.

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[1] The Greater Toronto Area is comprised of the five regional municipalities in the Toronto commutershed: Metropolitan Toronto, Durham, York, Peel and Halton. A map of the five regions in the GTA and their various municipalities is provided on the page opposite.

The results are presented in this report in the following four chapters:

- **Land information** - a description of the types of information which can be obtained from land monitoring systems and the potential uses and sources of this information.

- **Land monitoring systems** - a review of the types of land monitoring systems that are currently in operation in several centres in Canada. This provides information on a range of system designs (from the relatively simple to the more complex) which are actually in operation and the types of output provided by these systems.

- **Current Regional land monitoring systems in the GTA** - a review of the information systems in place in the GTA and plans for the future. Municipalities in the GTA already have systems in place which provide some information on land. This chapter presents a review of these systems and the information they provide.

- **Evaluation of potential designs for a GTA land monitoring system** - a review and evaluation of a series of three possible designs for a land monitoring system for the GTA. The systems evaluated range from a relatively simple system (with a limited range of information output based on information reasonably readily available from existing municipal sources) through to a complex system which requires significant changes in the land monitoring operations of the municipalities in the GTA.

In addition, a series of appendices present details behind the land monitoring systems in operation in other centres in North America and in the GTA as well as a glossary of the terms used in land monitoring systems.

POTENTIAL LAND MONITORING INFORMATION

Land Characteristics	OCCUPIED		BUILDING UNDER CONSTRUCTION		VACANT LAND					
					Designated					Undesignated
	Utilized to Capacity	Under-utilized	Completed	Started	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area										
Unit potential										
Population potential										
Unit/dwelling type										■
Lot sizes										■
Land Prices										
Owner name/type										
Servicing status: sewer										■
water										■

LAND INFORMATION

This chapter identifies the types of information which potentially could be obtained from a land monitoring system in the GTA. It also identifies the potential uses of this information and the sources which must be tapped to provide the information.

The focus of the discussion here is on residential land monitoring since this has been the main impetus behind this study. Potential sources of industrial land information in a GTA land monitoring system are discussed further in Appendix C.

POTENTIAL INFORMATION

The main types of information which can potentially be provided by a residential land monitoring system are summarized on the matrix on the opposite page. The information on any particular parcel (or groups of parcels) can be classified into two broad types (corresponding to the horizontal and vertical axes of the matrix):

- Development status - the stages of the subdivision approval process (for vacant land), the stage of construction (for land with buildings under construction), and the extent to which the land is utilized to capacity or underutilized (for occupied land). These various stages are summarized on the horizontal axis of the matrix.
- Characteristics of the land - the types of information which appear most useful with respect to any particular vacant parcel (or groups of parcels) are outlined on the vertical axis of the matrix.

Land monitoring systems can be designed to provide the complete matrix of all of this (and more) information both for individual parcels and for all land in a particular area. However, since not all of the information is available from a single source, gathering and presenting the full range of information requires a major commitment of resources. No municipality in the GTA has a system which comes close to providing the range of information shown here.

The following sections present a discussion and explanation of the above types of information for development status and characteristics of land separately. Later sections discuss the potential uses of various types of land monitoring information and the sources which could be tapped to provide the information. While the discussion focuses mainly on the **stock** of land at various stages of the development process, information on the **flow** of land through various stages can be easily provided where stock information is available.

Development Status

The stages of the subdivision approval process in Ontario are generally as follows:

- Land is designated to a particular use (e.g. residential) in the Official Plan which lays out the general density and location of major off-site services;
- The land is inactive until the owner decides to undertake a residential development; while this is being considered by the various authorities, the land is considered to be in the development approvals process;
- Draft approval of the development constitutes approval in principle though problems can still occur which delay the final approval of the subdivision;
- Registration or final approval constitutes the authority to develop the land; servicing has generally progressed to the edge of the parcel by this point.

These stages are relevant for monitoring vacant land on the periphery of built-up areas - so-called "greenfields" developments. Land at these stages is generally of the most interest to those developing land monitoring systems (and is the main concentration in this analysis); however, useful information can also be gathered regarding land at subsequent stages or land which is not subject to the subdivision approvals process:

- Building permits are required prior to commencement of construction; other stages of construction/occupancy of the building includes start, under construction, completion and absorption (occupancy);
- Land can also be made available for development through official plan amendments (OPAs), rezonings, and consents. A detailed land monitoring system would monitor these activities in order to get an idea of unit potential before the building permit stage. In the case where the official plan and zoning are in place, most non-subdivision developments are not subject to an approval process and only a building permit is necessary for development[2];
- Land which is occupied by a building can be underutilized in terms of its designated capacity; this means that additional building could occur on the site without the need for rezoning.

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[2] Many municipalities now require, as a condition for rezoning, the execution of a site plan agreement under which site plan approval is required before a building permit is granted. As well, residential buildings with more than 25 units usually are subjected to site plan control,even when the official plan and zoning are in place. Thus it may be possible to monitor land through various approval stages, before it reaches construction, by monitoring the site plan control process in various municipalities.

To be useful, information from a land monitoring system should identify land available disaggregated by its development status. The following provides a review of the major categories of the subdivision approvals process for greenfield land for which land monitoring information would be most appropriate (the reader may find it useful to refer back to the matrix at the start of this chapter as land in each category is discussed):

- **Registered and draft approved land** - land which is registered is generally capable of being built upon at any time, subject to a building permit being issued. Land which is draft approved is generally capable of being registered within a relatively short period. Together, registered and draft approved lands are considered to represent the short-term supply of land.

  The **Implementation Guideline for the Land Use Planning for Housing Policy Statement** prepared by the Ministries of Municipal Affairs and Housing calls on municipalities to maintain at least a three year supply of draft approved and/or registered lots and blocks for new residential development at all times, and at least a ten year supply of designated residential land for longer-term development.

  Even relatively crude land monitoring systems typically cover land which is draft approved or registered and available for building, though with varying degrees of detail as to the characteristics of the land.

- **Land in process** - land for which plans of subdivision are being prepared are considered to be "in process". Given the lengthy time involved in obtaining approvals for subdivisions, it is important that the supply of land at this stage be maintained at a level sufficient to meet possible future demand if land shortages are not to occur.

- **Inactive designated land** - this is land which is designated to a particular use in the Official Plan but for which no development application has been submitted.

- **Undesignated land** - this is land which could be developed at some point in the future but for which land uses have not yet been designated. It is generally regarded as very long-term potential land supply.

In addition to this vacant land available in greenfield developments, other categories for which land information can be disaggregated by development status includes:

- **Land with buildings committed or being built** - there are several stages which can be identified here:

  - building permit issued - authority to commence construction; this is usually the stage at which land is removed from the vacant land inventory;

- start - the commencement of construction on a building;
- under construction - buildings in the process of construction;
- completion - the completion of the building to a point where it is ready for occupancy;
- occupancy - the possession of the building by the tenant.

These stages are of little interest in terms of land supply monitoring specifically; however, they can be used as inputs into a comprehensive system where land use is monitored at all stages. As well, the building permit information can be used to "clear the register" of registered lots which are no longer available for building - they have been accounted for.

- **Land utilized to capacity** - this includes occupied land which is built up to the maximum permitted density. In general, land in this category is not of as great interest as most other categories in terms of measuring future development potential. However, rezonings can result in additional capacity being allowed, and this can be an important factor in built up areas.

  Though of less interest in terms of future development potential, information on the characteristics of land in this category is useful for a variety of purposes other than land supply monitoring. Many municipalities and other government bodies track the characteristics of existing uses (such as employment, type of industry, population, etc.) for a variety of planning purposes.

- **Land not utilized to capacity** - this includes occupied land which has additional capacity for buildings under the current zoning. From the point of view of measuring future development potential, the additional building which would be allowed on this occupied land is of the most interest.

This covers the range of development status categories for subdivisions which a land monitoring system can reasonably measure. Over time, of course, specific parcels of land will shift from one category to another as vacant developable land goes through the subdivision approval process or occupied land is rezoned to allow a different use or more density. Land monitoring systems can be designed to capture both the stock of land in each category as well as the flow in terms of the volume of land moving between categories in particular periods - both stock and flow measures are useful in monitoring land supply.

The characteristics of the parcels at each stage are also important; the types of information on the characteristics of land at each of these stages of development is reviewed next.

Characteristics of Land

For land at any particular stage of development, there is a variety of information that would be useful about the characteristics of either the parcel itself or the aggregation of parcels in a particular stage of development. While the information on a particular parcel is useful only for limited, local area-specific analyses, it is also usually required in order to provide the information on the aggregation of parcels into larger areas. Therefore, a system designed to monitor these characteristics must be based on maintaining the information for each parcel.

The types of land characteristics information which can be provided by a residential land inventory system, and the main uses to which this information can be put, are summarized below:

- **Land Area** - this is basic information on the number of acres/hectares in the parcel.

- **Number and types of units** - this is one of the most important items of information which can be provided by a residential land monitoring system. For registered and draft approved land, it presents an inventory of the short-term supply of land available for building which, when combined with estimates of demand, can provide an indication of the supply/demand balance in the market - particularly if there is a time series of data on the supply of land.

  The unit type categories used by CMHC (single, semi, row, apartment) appear the most useful for this type of analysis. A further disaggregation of the apartment category to identify high-rise versus low-rise units (5 or more storeys and 4 or less) to conform with Census of Canada definitions would be very useful as well.

  For land in process, or designated but inactive, information on the potential number and types of units provides a similar indication of the medium and longer-term supply of land. This type of information is useful both in aggregate for a large area such as the GTA but also for smaller areas such as regions, municipalities and areas within municipalities.

- **Population potential** - this can be useful in planning for various types of services and infrastructure (e.g. schools, hospitals, ambulances, etc.; sewers, water and roads, etc.) and other types of land uses (e.g. retail facilities, etc.) which need to be provided to accommodate the planned developments. Depending on the stage of the development process which the lands have reached, some of these services and infrastructure may already be either in place or planned. In general, this can readily be calculated from unit type information (if this is available) by applying a person per dwelling estimate.

- **Lot sizes** - this presents a further disaggregation of the types of low-density land available for development. Information on lot sizes is important because there are various sub-markets of demand for land: smaller, "affordable" lots are a different market from larger estate type lots and there are various sub-markets in between. Disaggregating the supply of lots into various sub-categories by size allows analysis of the availability of land of different types - this is particularly useful at times (like the present) when there is a dramatic shift in demand towards a particular type of lot (in this case, smaller lots).

- **Prices** - the prices at which land parcels change hands are a useful market indicator; rising or falling prices for land planned for different types of developments can signal an under or oversupply of land of a particular type. Over time, changes in land prices are useful as a measure of underlying inflation in the market. For participants in the market, knowledge of the prices involved in recent land sales is important in determining the viability of potential future developments.

  However, obtaining meaningful price information can be quite difficult even if data are readily available. Often, the real price of a given lot could vary substantially depending upon the terms of sale (deposits; interest rate and timing of repayment; etc.) - difficult if not impossible to track in a simple price monitor mechanism. As well, in some cases lot levies are included in the price and in other cases they may not - also difficult to monitor.

  One way to get around this problem may be to have the information collected by a private firm that regularly monitors land prices, as was done for the past *Residential Land Inventory* reports for the GTA. The land price data in these reports is based on discussions with real estate professionals familiar with current land prices in given areas, and would correct for varying terms of sales.

- **Ownership** - this provides participants in the market with knowledge of the key actors involved in developing particular parcels or broader areas of a municipality. It is also useful in measuring the level of concentration in the land market. The fact that much of the land controlled by large landowners is held in separate companies (often numbered companies) complicates the use of these data to measure concentration; however, with additional information sources, such analyses can be undertaken.

- **Servicing status** - the information available (or feasible to obtain) with respect to the status of servicing may depend on the stage the land has reached in the approval process. By the time that land is draft approved or registered, it generally has access to the required servicing; however, for longer-term land, the question of availability of services can be more problematic since servicing may depend on the development plans and decisions of other landowners in the area as well as overall capacities of the municipal servicing systems.

- **Timing of development** - an owner's plans with respect to the timing of the development of the land is an important item of information. In general, in the GTA, once a developer registers land, development proceeds as quickly as possible since lot levies are usually incurred at this stage.

For unregistered land, estimating the likely timing of development is usually a judgement call which must be made by either the planner involved in monitoring the progress of the development application or the owner in assessing the amount of time likely to be involved in the approval process and the most appropriate time to bring the land to the market. It is a "softer" type of information than the others presented here which generally are facts on which little judgement is required.

These are the main characteristics of land that could be covered by a land monitoring system. In addition to those characteristics outlined above, there are a wide variety of other potential types of information which could be obtained from a land monitoring system: for example, various types of geographic identifiers could be incorporated that would indicate the traffic zone, planning area, municipal address, or census tract in which the parcel(s) is (are) located; as well, physical land characteristics that may affect development can be recorded such as topography and slopes, soils and septic potential, watershed and aquifer recharge, and proximity to road or road frontage; parcel history information could also be maintained which might include things such as parcel numbers that indicate "parent" parcels and "child" parcels or records of previous public actions regarding one or many parcels.

While useful, these characteristics are considered to be of secondary importance for the type of system being contemplated in the GTA; they are more likely to be included in a more comprehensive type of system such as a Geographic Information System which is considered beyond the scope of this study.

POTENTIAL OUTPUTS FROM A LAND MONITORING SYSTEM

As is evident from the review of the types of information that can be covered in a residential land monitoring system, there are a wide variety of potential outputs from such a system. However, the importance of specific types of information to different potential end users may vary substantially. Thus, part of the research for this project involved contacting a wide variety of potential end users of land supply information to find out their priorities in the development of a land monitoring system.

Among the firms/organizations/government bodies contacted for this part of the analysis were the following: the Ministry of Revenue (MOR); the Ministry of Natural Resources (MNR); the Ministry of Agriculture (MOA); the Ministry of Transportation and Communications (MTC); the Ministry of Consumer and Commercial Relations (MCCR); Ministry of Municipal Affairs (MMA); Ministry of Housing; the Office of the Greater Toronto Area (OGTA); each of the five regional municipalities of the GTA; a number of municipalities in the GTA; the Toronto Home Builders' Association (THBA); the Urban Land Institute (ULI); and Canada Mortgage and Housing Corporation (CMHC).

From these discussions with a range of potential users of land supply information, the following appear to be representative of the main types of outputs which such a system could usefully generate in the GTA:

- **Subdivision status report by sub-area** - this is basic information on the subdivisions which are in the planning process or already are registered (but not built on). A report by sub-area could provide relevant information on individual subdivisions such as size of the parcel, number of units by type, lot sizes, ownership and development status (possibly with a map to show the locations of each subdivision). This provides extensive information on all the proposed developments in a particular area.

  Most organizations contacted expressed some interest in having regular subdivision status information for the GTA as a whole. As well, many thought that having the information broken down by sub-area or for individual subdivisions within a municipality could be useful for more detailed analyses. In general, much of this information is already available to (and used by) users at a local level but it is not compiled at the GTA level.

- **Summary subdivision status by municipality** - this is an aggregation of the sub-area information presented in the previous section. It could provide an inventory of the number of units (as well as other relevant information of the types noted above) at various stages in the development process. This provides a summary of the volume of land available at each stage and, combined with information on expected demand, can help illustrate whether the amount of land in the development "pipeline" is adequate (or of the appropriate type) to meet the demand - given likely time frames for processing at each stage. This is the type of information required to satisfy the land supply inventory called for in the Provincial **Implementation Guideline for the Land Use Planning for Housing Policy Statement** (a three year supply of draft approved and/or registered land). Aggregations of information among municipalities can yield similar information for agglomerations such as the GTA.

  Again, most organizations contacted expressed some interest in having regular reports of subdivision status in the GTA. In particular, the industry organizations and individuals in policy positions in government recognized that this information is essential for meaningful analysis of land market trends. Generally, it was thought that the information should, at a minimum, be broken down by municipality. Obviously, for some analyses, more detailed information, perhaps by individual subdivision, would be preferable.

- **Flow of new applications, draft approvals, and registrations** - this provides a summary of activity in the subdivision approvals process over a given time period by monitoring the volume of units in new applications, the volume that reached the draft approval stage during the same period, and the volume that were registered. This can be useful in comparing with past flow activities as well as the volume of building in order to see how the volume of land proceeding through the development approvals process compares with past activity.

Generally, municipalities and regional municipalities refer to flow data rather than stock data as it pertains to their activity over a certain period. By comparing flow data over two equal time periods, municipal approvals activity can be monitored - whereas stock information is more useful in comparing volumes of applications over two periods. Most potential users recognized that flow data would be a useful supplement to stock data for analysis of land market trends.

- **Designations of long-term land** - the amount of land designated for residential development (in addition to that already in the development approval "pipeline") indicates the amount of land available for long-term development in a municipality. The Provincial Policy Statement indicates that a minimum of ten year's supply must be available at all times.

  This information is of particular use to the Ministries of Housing and Municipal Affairs in monitoring compliance with the Provincial Policy Statement. As well, municipalities and the private development industry would find the information useful in assessing the adequacy of the existing land supply and the potential for future competition.

- **Ownership patterns of vacant land** - the number and size of parcels (and possibly their characteristics as well) in any sub-area or municipality under the ownership of various companies and individuals. This could provide an indication of the degree of concentration of the ownership of land in particular areas and in the market as a whole.

  This is important to certain government bodies (particularly MCCR) who are interested in the potential concentration of ownership in the future land supply. As well, at a micro level, this information is useful to developers in assessing their competition and in assembling land.

- **Processing time for subdivision applications** - with an on-going monitoring system, a useful by-product is the length of time taken for land to proceed through the development approval process. Differences among municipalities and over time could also be useful to indicate where problems are occurring in the approval process.

  This information could be useful for both municipalities and provincial government bodies. In addition, industry associations expressed interest in this potential output. Municipalities could compare their processing time and assess their performance. The Ministry of Municipal Affairs may better be able to locate problem areas in the GTA. As well, allegations of slow

turnaround times on proposals could be investigated with facts rather than conjecture.

- **Servicing constraints on vacant land** - the combination of land supply information with information on the servicing capacity of lands both in the development approval "pipeline" and other available capacity could provide an indication of the need to plan for additional services. Combination of this with information on the ownership of the land could assist in an analysis of the degree of monopoly power in the land market.

  A number of the organizations contacted expressed a keen interest in the monitoring of potential servicing constraints in the GTA as these were thought to be a problem currently - though most indicated an understanding of the difficulty involved. CMHC, in particular, is interested in including this information in a potential land monitoring system.

- **Under-utilization of existing built-up areas** - information on the amount unused capacity for new building in built-up areas can indicate the potential for more intensive use of existing infrastructure on a macro basis and also identify the areas (and specific parcels) where land is under-utilized. This type of information would assist with the analysis of options for future growth in a municipality or the GTA as a whole.

  Although it was generally thought that information on potential infilling or redevelopment of already built up areas would be useful in a land monitoring system, particularly where Metro Toronto municipalities are concerned, information on so-called "greenfield" developments was thought to be most important in a land monitoring system for the GTA. The OGTA, in particular, indicated that the potential for development in built-up areas would be very useful.

- **Sales prices of land** - if the data base for the land monitoring system is connected with a source of information on sales transactions, the sales prices of land of various types could be provided by the system. This information would be extremely valuable in monitoring trends in prices - which could indicate whether land shortages are occurring in the market.

  Generally, while there was wide agreement among the organizations contacted that sales price information would be particularly useful in a land monitoring system, there was some concerns about what sources would be used for this information and about how the dramatic differences in the "terms" of land contracts among builders and developers could be accounted for.

This covers the major uses of the information which could be generated by a comprehensive land monitoring system. No doubt, there are a variety of other types of uses, however, these cover the main potential uses identified in the course of this study.

LAND WITH DEVELOPMENT POTENTIAL – DATA SOURCES

LAND CHARACTERISTICS	BUILT LAND		VACANT LAND					
	Under-Utilized Occupied Land	Buildings Under Construction	Designated Land					Undesignated
			Permit Issued	Registered - No Permit	Draft Approved	In Process	Inactive	
Land Area	Assessment	Surveys	Building Permits	Development Application	Development Application	Development Application	Assessment	Assessment
Unit Potential	Zoning	Surveys	Building Permits	Development Application	Development Application	Development Application	Zoning	Existing Densities
Dwelling Types	Zoning	Surveys	Building Permits	Development Application	Development Application	Development Application	Zoning	Existing Densities
Population Potential	Zoned Densities	Planned Densities	Planned Densities	Planned Densities	Planned Densities	Planned Densities	Designated Densities	Existing Densities
Lot Sizes	Subdivision Maps	Subdivision Maps	Subdivision Maps	Subdivision Maps	Subdivision Maps	Subdivision Maps		
Lot Prices	MCCR	MCCR	MCCR	MCCR	MCCR	MCCR	MCCR	MCCR
Owner name/type	Assessment	Building Permits	Building Permits	Development Application	Development Application	Development Application	Assessment	Assessment
Servicing Status: sewer water	(LAND ALREADY SERVICED)				Local Planner	Local Planner	Local Planner	
Development Timing	(NOT APPLICABLE)			Local Planner	Local Planner	Local Planner	Local Planner	

SOURCES OF LAND SUPPLY INFORMATION

Most of the information required for a land monitoring system is available in the planning department of a municipality - though not often in a form which is computerized and therefore easily accessible as an input into a regular monitoring system. In some cases, the information is also available in other departments but the most logical source is still the planning department.

In addition to municipal sources, there are a number of other sources of land related information that can have use in a land monitoring system. The matrix on the page opposite presents a summary of the usual sources of each of the types of information outlined in the previous section.

The main potential sources of land supply information and the types of information available from each are outlined below:

- Development applications:
    - -land area in hectares;
    - -unit potential by dwelling type;
    - -land ownership (owner name and ownership type).

- Municipal zoning by-laws and official plans:
    - -unit potential by dwelling type;
    - -designated residential land.

- Building permit files:
    - -land area in hectares;
    - -unit potential by dwelling type;
    - -land ownership (owner name).

- Subdivision plan maps:
    - -lot sizes.

- Local planners' knowledge
    - -servicing status;
    - -development timing.

- Capital works program:
    - -potential timing of development.

- Ministry of revenue year-end assessment file:
    - -land area in hectares;
    - -land ownership (owner name and ownership type).

- Ministry of Consumer And Commercial Relations:
    - -land title information;
    - -land transaction information (sales value, dates, etc.).

This diversity of sources and the fact that much of the information is not computerized complicates attempts to establish a land monitoring system, especially a comprehensive one which covers all of the information discussed in this chapter. The next two chapters review the types of systems in operation in other centres and in the GTA; the final chapter presents options for obtaining some or most of the information presented here for municipalities in the GTA.

LAND MONITORING SYSTEMS

The type of system required to collect the range of information discussed in the previous chapter depends, of course, on the amount of information required. Land monitoring systems in use in Canada and the United States vary from relatively simple systems which monitor only a bare minimum of the range of information outlined above to highly complex systems which provide a vast range of information. The types of systems in operation in other centres are discussed in this chapter and (in detail) in Appendix A. The systems currently in operation in the GTA are discussed in the next chapter.

As noted, depending on the types of information required, land monitoring systems can either be very complex and yield a great deal of information or be relatively simple and yield much less. The first section in this chapter briefly reviews the difference between the type of comprehensive system which would be required to produce the full range of information discussed in the previous chapter and the more limited type of system which is envisaged as the likely product of this study. The remaining sections review the types of more limited systems which are in operation in other centres in Canada and which are considered more feasible potential models for a land monitoring system in the GTA.

GEOGRAPHIC INFORMATION SYSTEMS

To provide the full range of information on the characteristics of land at each stage of the development process including land in built-up areas (as illustrated in the matrix) would require the implementation of a Geographic Information System (GIS). These are systems which integrate information on the characteristics of individual land parcels from a variety of sources into a computerized database which can then provide a vast range of information on any particular parcel and, therefore, on any aggregation of parcels as well.

The type of GIS discussed in the land monitoring context has a computerized (digital) map as its base with component digitized land parcels nested within it for a given geographic area. Each parcel is given a geocode thereby linking it to various land-based databases. A complex GIS system such as this is analogous to transparency overlays that can be placed on a base map for overhead presentations; any number of layers of data (separate databases) can be lain over a base map for any given area.

GIS's have a number of uses, only one of which is land monitoring. In some of the more advanced systems, practically all land related information is entered into the GIS database. Since data for each parcel of land in the municipality is available for the system, a GIS has virtually unlimited potential uses. The following list provides some examples of other applications cited in a number of GIS systems:

- Issuing building permits, or other permits and licences
- Managing water, sewer and road systems
- Automating property assessment records
- Mapping voting/polling areas and election management
- Maintaining a street inventory
- Emergency dispatching and response planning (fire, police)
- Vehicle routing (public transportation planning)
- Safety inspection and code enforcement (inspectors schedules)
- Land use, environmental and transportation analysis and planning
- Facility siting; identification of optimum location for facilities
- Automation of planning-related correspondence (notifications, etc.)
- School capacity analysis

A GIS would clearly be appropriate to provide the range of land supply information identified in the terms of reference for this study; however, it is considered beyond the scope of this study to recommend the adoption of such a system. Land monitoring is only one of the many uses which might justify the substantial costs involved in the implementation of a GIS and, by itself, is unlikely to be sufficient.

It is worth noting here that many municipalities in the GTA are moving progressively towards the implementation of a GIS though on an incremental, progressive scale - with land supply monitoring only one of the (low priority) potential uses. Also, the Ministry of Consumer and Commercial Relations (MCCR), together with the Ministry of Natural Resources, is currently in the process of automating its POLARIS (Province of Ontario Land Registration Information System) database in Metro Toronto[3]. However, it will be many years before a system set up by MCCR will be available for land supply monitoring in the GTA or when all the municipalities in the GTA have operational GISs whose output can be combined for use in land supply monitoring.

While a GIS type of system appears inevitable for all parts of the GTA, proposals for the implementation of such a system are well beyond the mandate for this study. Therefore, the remainder of this study concentrates on a more limited type of system which would appear to be appropriate for the GTA. Such a system could be operational until GIS systems evolve to the point where they can replace the interim system with the much more comprehensive information that can be derived from the various data bases involved in a GIS.

The remaining sections of this chapter review the types of land monitoring systems based on information generated by the subdivision approvals process which are in operation in other centres in Canada. These systems provide much though not all of the types of information outlined in the previous chapter.

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[3] POLARIS is essentially a GIS system (the POLARIS database has already been automated for the Oxford County System which is discussed further in Appendix A).

MONITORS OF REGISTERED PLANS ONLY

Land Characteristics	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area						
Unit potential		X				
Population potential						
Unit/dwelling type		X				■
Lot sizes						■
Land Prices						
Owner name/type						
Servicing status: sewer						■
water						■

SYSTEMS BASED ON THE SUBDIVISION APPROVALS PROCESS

All of the land monitoring systems reviewed in the course of this study were based mainly on information from the subdivision approvals process. While this covers the bulk of land used for new residential development in most municipalities, as discussed in the first chapter, it is not comprehensive. The subdivision approvals process often does not cover potential residential land created through official plan amendments, rezonings, consents or redevelopment of land which is already appropriately zoned. These can be an important source of new units in built-up areas such as Metropolitan Toronto. To capture information on the potential land from these sources, a more comprehensive system which monitors land uses in built-up areas would be required.

To provide a sense of the types of land supply information being gathered in centres across Canada, a number of municipalities were contacted and a small number were selected for further study. The following municipalities were studied in detail (the results are presented in Appendix A) because they generally represented the range of systems in operation in Canada today:

- Calgary
- Edmonton
- Kitchener-Waterloo
- London
- Ottawa-Carleton
- Winnipeg

The land monitoring systems in place in these municipalities basically fit into two categories: those that monitor only registered plans of subdivision and those that monitor subdivision applications through a number of planning stages. These two types of systems are discussed further in the sections that follow.

Monitors of Registered Plans Only

These systems monitor only registered plans of subdivision. They maintain an inventory of vacant lots in registered subdivisions for which no building permit has been issued. Once a subdivision is registered, it is immediately added to the vacant lot inventory; as building permits are issued for the lots in each subdivision, these are subtracted from the inventory. In terms of the potential matrix of information which can be generated by a land monitoring system (see opposite page) this type of system is extremely limited.

The system is very easy and relatively costless to maintain. Information as to when subdivisions are registered is readily available and most municipalities have automated building permit files. The resulting inventory gives an indication of the short-term supply of lots by dwelling type in various parts of the municipality as well the total.

MONITORS OF PLANS AT VARIOUS STAGES

Land Characteristics	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area		S	S	S	S	S
Unit potential	S	X	X	X		
Population potential		S	S	S	S	S
Unit/dwelling type		X	X	X		■
Lot sizes		S	S	S		■
Land Prices						
Owner name/type		S	S	S	S	
Servicing status: sewer						■
water						■

X = information collected by all municipalities

S = information collected by some of the municipalities

The main advantage to maintaining this type of system is its low cost; but it provides only a limited range of information. In the case of the GTA, a system which monitored only the short-term inventory of vacant lots in registered subdivisions would not be of significant use. Registered lots can be absorbed in a relatively short period so the inventory would give little indication of potential land supply problems. Such a system is considered to be of little value for the GTA.

Monitors of Plans at Various Stages

Most of the Canadian municipalities which have land monitoring systems fit into this category. These systems include plans of subdivision at all stages of the planning process and in some cases include information on land designated residential with no plan of subdivision (inactive land). Compared to systems which cover only registered plans, these systems are more comprehensive and provide a broader picture of the short and long-term supply of vacant residential land. With the exception of Ottawa-Carleton, where an attempt is made to monitor smaller infill parcels, these systems generally do not include small infill parcels or occupied land with potential for additional residential units as a result of redevelopment, conversion or intensification.

The major characteristic monitored by this type of system is unit potential by dwelling type. However, unlike data from a system which monitors only registered plans, the data is divided among the various planning stages the subject lands have reached. The subdivision information can be aggregated and provided at either the neighbourhood/community level, or by settlement area, traffic zone or census tract. Other information sometimes collected by such systems includes ownership, servicing and land area.

The data collection process is generally on-going or annual (depending upon what types of data are being collected) with reports on a quarterly, semi-annual or annual basis. This type of monitoring effort is more of an integral part of the local planning process when compared to systems which cover registered plans only, and is therefore, more comprehensive and time-consuming to maintain.

In each centre examined in this category, the residential land inventory is supplemented with information from other sources though the information is not linked with the subdivision specific data. Types of supplementary data provided include:

- Residential land servicing activity per year;
- Building permit and/or construction activity;
- Information on the existing dwelling stock;
- Existing land use and zoning information;
- City-wide measure of residential land with infill, redevelopment or intensification potential; and
- Estimate of demand for residential land based on land consumption trends and residential development densities.

In some of the systems examined, annual reports concerning land supply/use include mapping of parcels or aggregated areas. Since none of these municipalities currently have automated GIS systems, this process was essentially a manual one and is time consuming. Essentially, in any system with subdivision/application specific information, such a manual mapping procedure is possible: it is a matter of whether the cost of this mapping is worth the benefits it provides. While there are certainly advantages to having land related information mapped (in particular, it can be useful in micro-level analyses), this does not appear to be of central importance in a land monitoring system.

Readers interested in further details regarding these systems should consult Appendix A which provides an indepth review of the information gathered and presented in each system as well as commentary on the strengths and weaknesses of each.

CURRENT LAND MONITORING BY THE REGIONAL MUNICIPALITIES OF THE GTA

Land Characteristics	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area	S	S	X	X	S	
Unit potential	S	S	X	X		
Population potential						
Unit/dwelling type	S	S	X	X		■
Lot sizes						■
Land Prices						
Owner name/type	S	S	X	X		
Servicing status: sewer						■
water						■

X = information collected by all outer regions of GTA

S = information collected by some of the outer regions of GTA

LAND MONITORING IN THE GREATER TORONTO AREA

This chapter provides a review of land monitoring activities currently underway in the GTA, as well as a review of the Ministry of Consumer and Commercial Relations' POLARIS. Each of these activities is discussed below in the context of its potential use in a land monitoring system for the GTA. A more detailed review of the various land monitoring activities currently underway in the GTA, as well as a review of past and expected future activities, is provided in Appendix B.

LAND MONITORING BY REGIONAL MUNICIPALITIES

The four outer regional municipalities in the GTA (Halton, Peel, York and Durham) already collect much of the information being sought in a land monitoring system for the GTA. The planning departments in these regions all track new subdivision activity from the time of initial application through to registration. Some also provide information on registered and unbuilt land and designated but inactive land.

In Metropolitan Toronto there is little information currently being compiled by the Planning Department on vacant land that would be of use in a land monitoring system; there is less use for such a system in Metro since there is little vacant land and most development occurs on infill or redeveloped parcels.

Clearly, where the required information is available at the regional level, a great deal of time and effort in compiling and coordinating information from local municipalities can be saved. For this reason, the analysis in this section is focused upon the activities within the regional planning departments in the GTA. In order for data from local municipalities to be of use in a land monitoring system in the GTA, it would have to be collected in a consistent manner from all 30 municipalities which would require significantly greater administrative resources than if similar data could be collected from the regions.

Because there are many similarities in the types of information being collected in the outer regions (Halton, Peel, York and Durham), land monitoring activities in these regions are reviewed together, and Metro Toronto is discussed separately.

Land Monitoring in the Outer Regions

Without exception, each of the planning departments in the outer regions currently tracks subdivisions through the planning process and records the date each application reaches the following stages (see matrix on opposite page):

- In process;
- Draft approved; and

- Registered.

In addition, the following characteristics of each subdivision are recorded for each of the above stages:

- Land area;
- Unit/dwelling type; and
- Owner name.

The information collected in each region is entered into machine readable databases on an ongoing basis which makes merging the data into a single database a possibility.

This information alone provides an important part of what is being sought in a land supply monitoring system. With this information the following can be established:

- Unit potential by dwelling type for draft approved land and land in process;

- Ownership characteristics of draft approved land and land in process;

- Time it takes for land to proceed through the development process; and

- Volume of applications, draft approvals and registrations by dwelling type for any period.

While this information on subdivision activity alone would be quite useful for the GTA, the information is still not complete; it does not cover designated inactive land, official plan amendments, rezonings or consents, and there is no way to tell when a subdivision has been developed and is no longer part the available residential land supply. A discussion of these problems is presented below.

- **Clearing the register** - one important element missing from this data set, from a land supply perspective, is a way to "clear the register" of registered lots available for building once construction activity has begun on a lot and it is no longer part of the vacant land supply. Two of the regions, Peel and Durham, currently monitor building permits by registered plan number on an automated system and can clear the register with this information. However, Halton and York do not currently track building permits by registered plan number in an automated system and thus cannot keep track of the number of registered lots with no building permit against them at any given time. Thus, the short-term supply of residential land in terms of registered lots with no building permit is not available for these regions.

- **Designated inactive land** - another important element missing from this data set is the volume of land which has been designated for residential use but for which no application has been submitted. This is important in establishing the long-term supply of residential land. Only one of the outer regions, Durham, currently measures and identifies land which has been designated for residential use in the Official Plan. This is undertaken annually in Durham as part of their Official Plan Review; using various planning maps, those areas designated for residential purposes for which no application exists are measured and outlined in an annual report. None of the other outer regions currently undertakes such an exercise. Thus, to obtain this type of information in the other three regions on a regular basis, a system will have to be set up to produce it.

- **Official Plan Amendments, Rezonings and Consents** - currently only Durham and Halton monitor the additional unit potential created through official plan amendments, rezonings and consents[4]. Therefore, the only consistent data set available from all the outer regions would be on subdivision activity. While this would be fine for getting at greenfield development, it is not comprehensive.

  For example, there could be an application for an official plan amendment to allow an apartment building on some land currently designated industrial. Once approval is granted, only a building permit is required for development - the unit potential would not be captured by a subdivision based system. Similarly, unit potential from rezonings would also be overlooked in a system that monitors only subdivisions.

  Consents (severances) are another potential source of land for residential development and are usually monitored by a separate Land Division Committee. Usually not more than a few new lots can be created through one consent: at the discretion of the granting authority, if several severances are intended in the same area a plan of subdivision is required.

  Unless all regions begin tracking unit potential by dwelling type at the application stage for official plan amendments, rezonings and consents, there will be no way to monitor unit potential from these sources until a building permit has already been issued. Tracking these activities would also require that building permits for these lots be monitored in order to "clear the register" (see discussion above).

  Based on discussions with planners in each of the four outer regions and a historical comparison of unit creation through plans of subdivision and consents with building permit information, an attempt has been made to estimate the extent to which potential units could be missed through a system which only covers plans of subdivision. Generally, in the four outer regions, about 75-80 percent of units are created through plans of subdivision. Another 10-15 percent of units are created through site plan control (often OPAs and rezonings), and another 1-5 percent are created through consents. Finally, about 5-10 percent of all units created have been on land already zoned that only needed a building permit to proceed.

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[4] Durham's rezoning monitoring is currently being revamped and will be ready for use before the end of 1990. Although York also monitors consents, this is only for three of its nine municipalities.

Metropolitan Toronto

There were only five subdivision applications in Metropolitan Toronto in 1989, while there were many applications for multiple housing structures. Thus, in Metro's case, monitoring of subdivisions is of relatively little importance but would be quite easy to do on a regular basis, in order to provide data which is consistent with data in the other four regions of the GTA.

A historical analysis of unit creation in Metro over the 1977-1984 period revealed that only about 30 percent of all units created were through plans of subdivision - the remainder were created through official plan amendments, rezonings, consents, and land already zoned. Discussions with Metro planners suggest that the proportion of units created through plans of subdivision has fallen since 1984 and is expected to continue to fall as there is little land left for subdivision development. Thus, in Metro, monitoring of official plan amendments, rezonings, and consents will be much more important in terms of capturing land supply (mostly for high-density units) for residential development in the future.

At the present time, development applications are not monitored in an automated system by the Metro Planning Department. However, funds have been set aside for an automated system to track subdivisions, official plan amendments, and rezonings (consents will not be monitored) and it is expected to be operational by the end of 1990.[5] Therefore, this is an opportune time for discussions with the Metro Planning Department in order to ensure that the information which will be collected by the system will be compatible with that currently available from the other regions.

LAND MONITORING BY THE MINISTRY OF MUNICIPAL AFFAIRS

Plans Administration Computer System (PACS)

The Ministry of Municipal Affairs currently monitors development activity through the Plans Administration Computer System (PACS). Of particular interest in terms of land monitoring, PACS can provide detailed information on the following types of applications:

- Official plan and official plan amendments;
- Plans of subdivision stages: submitted, draft approved, registered; and

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[5] Discussions with members of Metro's planning department revealed that somewhere in the range of 400 to 500 residential lots have been created each through consents each year in Metro in the past few years.

- Zoning order and zoning order amendments;

This is more comprehensive than the information currently available from the systems in operation in the regions which cover only plans of subdivision in most cases though, as with some of the regions' systems, it cannot currently track registered but unbuilt or designated but inactive land.

For applications monitored by PACS, a variety of information is collected on each application including the following:

- Application type;
- Municipality;
- Application description;
- Applicant name/address;
- Potential units;
- Status (with dates); and
- Unit type.

As with the systems in the regions, PACS does not provide any information on dwelling units for which the official plan is in place and only rezoning is required; for these units, only a building permit is required for development.

While PACS would appear to have significant potential for land monitoring, there are some important problems. One is that the timing and quality of the information provided to the Ministry varies significantly by region. In the case of Metro Toronto, for example, the Ministry received only annual reports from the Planning Department until 1988; the Planning Department has not submitted anything to the Ministry for 1989. Also, as of January 1, 1990, data on development applications is no longer being entered into PACS in some of the Regions in the GTA (Halton, Metro, and Peel specifically). Approval authority has been delegated to the Regions in these areas, and little value is seen currently in having the Ministry monitor these approvals. Thus, use of the PACS system for land monitoring would require that the Ministry and the Regions recommit the necessary resources for ongoing monitoring of this information.

Another major problem with PACS, according to the Ministry, is its lack of flexibility. Currently, information on the number of lots in a subdivision is not tracked (just the number of units) and the area of the subdivision is also not available. As well, because of the system's setup/design, generating non-standard reports is difficult and costly at the present time. Thus, adding land monitoring information to the PACS system would likely present serious problems for the Ministry.

Finally, significant problems with the data quality in PACS were identified in a 1987 report by Stevenson Kellogg Ernst & Whinney. Discussions with planners in the Ministry revealed that many had serious concerns with the completeness and quality of the data.

Housing Policy Statement Monitoring System (HPSMS)

The Ministry of Municipal Affairs is in the process of developing a Housing Policy Statement Monitoring System (HPSMS) which will supplement some of the housing development data available via PACS. The proposed system differs in that it focuses on development activity pertaining to "affordable housing". Essentially, the system is designed to aid Ministry staff in monitoring municipal compliance and implementation of Ontario's Policy Statement on Land Use Planning for Housing. It will be used as a key source of data concerning the number and type of affordable housing units being proposed and/or developed in municipalities throughout the Province.

The HPSMS is currently being developed using ORACLE relational database software and will be comprised of four separate modules, namely: *Development Approval Status Log* (DASL); *Official Plan Conformity Log* (OPCL); *Zoning By-law Conformity Log* (ZBCL); and *Priority Area Status Log* (PASL). The purposes of the logs are as follows:

> **Development Approval Status Log (DASL):** Will monitor the status of residential subdivision/condominium applications with emphasis on the number of *"affordable housing"* units being generated under this process. The DASL will also record the number, type, tenure, affordability, and average processing time of these subdivision/condominium applications.
>
> **Official Plan Conformity Log (OPCL):** Will monitor housing-related official plans and amendments to determine their conformity to the policy statement. In particular, the OPCL will describe the type of OP/OPA in terms of the requirements outlined in the policy statement, as well as, calculating average processing time in accordance with *"streamlining"* objectives. Where applicable, estimates of residential unit counts will also be included.
>
> **Zoning By-law Conformity Log (ZBCL):** Will function similar to the OPCL, but the monitoring will apply to housing-related comprehensive/major zoning by-laws; the intent again being to determine their conformity to the policy statement.
>
> **Priority Area Status Log (PASL):** Will monitor compliance with the *"due date"* provisions outlined in the policy statement by all municipalities situated in *"priority areas"* (i.e., the Regional municipalities of Durham, Halton, Hamilton-Wentworth, Metro Toronto, Niagara, Ottawa-Carleton, Peel, and York, as well as Census Metropolitan Area of London and Windsor).

As it is currently conceived, the HPSMS has potential to become an important source of data for a land monitoring system in the GTA. A great deal of the base information required in a land monitoring system will be available through it, such as the development status, unit potential, dwelling type, land area, and average processing time for subdivisions. As well, the system will cover housing-related official plans and amendments; something not currently being monitored at the regional level. Also, because the system is being designed in an ORACLE environment, there should be little difficulty in generating non standard reports; making it much more flexible than the current PACS system.

In conclusion, even though the coverage for the HPSMS will be Ontario-wide, its design features could be used as a starting point in the development of a land monitoring system for the GTA. Selection of new system specifications would obviously have to be undertaken and substantial development resources acquired. High level discussions would also have to take place to determine responsibility for systems development, selection of systems architecture, data collection/reporting, administration, on-going maintenance, etc.

LAND MONITORING BY THE MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS

The Ministry of Consumer and Commercial Relations (MCCR) is responsible for the Land Registration System in Ontario. The Real Property Registration Branch of the Ministry manages and operates the Land Registry Offices located throughout Ontario. These offices register, store, and preserve a wide variety of information pertaining to the ownership and encumbrance of real property under the Land Titles and Registration Systems.

The branch is also responsible for the development and implementation of POLARIS - an automated title record system and a mapping system. A prototype has been developed and implemented in the Oxford Land Registry Office (the Oxford system is described in further detail in Appendix A) and further initiatives are underway in other areas of Ontario including some GTA municipalities.

Among the information that the Ministry collects that could be very valuable in land monitoring are the value and date of all land related transactions, legal descriptions, the address, the plan type, recent sales prices, and title information (such as mortgages, liens and easements).

Currently, the POLARIS system contains two types of information about each parcel of land in the areas in which it is operating:

- Legal property description.
- A description of documents that are associated with each property. This includes information such as transfer documents, active plans, and other active documents.

This information is maintained in two databases: one is a graphical database, representing graphic information for each parcel; the other is a tabular database which stores various documents and characteristics associated with each parcel.

Automation of the land register process in the GTA is currently underway in some municipalities. Approximately 70 percent of the City of North York has been automated and part of Scarborough has been automated as well. The Ministry expects that all of Metro Toronto will be fully digitized and automated by 1995.

In addition to work in Metro Toronto, the Ministry has been involved to some extent in GIS developments currently underway in Burlington, Oakville, and Mississauga. It is not clear at this point whether the GIS developments underway in these municipalities will lead to an automated land registry system as well, but greater ease in the interchangeability of graphics data may make this possible.

Automation of the entire GTA is very much a long-term prospect. As such, it will have little value in providing immediate results for land monitoring in the GTA, especially when one considers that the majority of the vacant land for which the monitoring system is to be established would be in the outer regions of the GTA and these will not be fully automated for some time.

Given that automation of POLARIS in the GTA is a long way off, its incorporation into a land monitoring system which could be set up relatively easily and quickly is considered to be beyond the scope of this study.

EVALUATION OF POTENTIAL DESIGNS FOR A GTA LAND MONITORING SYSTEM

This chapter presents a series of options for systems which monitor land in the GTA. As noted earlier, the collection of the full range of potential data on land which is described in the first chapter would require the implementation of a GIS in the GTA. While this would be very desirable from the viewpoint of generating useful information on land supply, it is beyond the mandate of this assignment to recommend such a system. Also, as noted earlier, GIS types of systems are being progressively adopted by municipalities in the GTA (for other purposes) and the Ministry of Consumer and Commercial Relations is proceeding with the extension of the POLARIS system to the GTA, so it appears that this type of information may be feasible to obtain in the GTA in the future - though how long in the future this will be is unclear.

The land monitoring system options presented here are intended to fill the gap in information in the meantime. As outlined in the terms of reference, the options all utilize (and supplement) land supply information available at the municipal level in order to minimize the costs involved. Based on discussions with officials of the Ministry of Municipal Affairs, it appears that the Ministry's proposed *Housing Policy Statement Monitoring System* may have potential to become an important source of data for a land monitoring system in the GTA. However, the design of this system was prepared without consideration given to its potential use in a land monitoring system; thus, substantial resources would have to be dedicated to the selection of new system specifications before the HPSMS could be used in a land monitoring system, and high level discussions would also have to take place to determine responsibility for systems development, selection of system architecture, data collection/reporting, administration, and on-going maintenance.

It appears that the existing systems in operation in the regions represent the best starting point on which to build a GTA land monitoring system. However, as outlined in the previous chapter, there are differences in the types of information available from each municipality, so all options require at least some additional work to generate comprehensive data for the GTA.

The chapter is divided into three sections which outline three progressively more complex options for a system to monitor residential land in the GTA:

- **Option 1 - A simple system for monitoring aggregate vacant residential land in the development approvals process** - this is a very simple system which would provide a summary of the aggregates of the numbers of units of each dwelling type which are currently in the subdivision approvals process in each municipality in the GTA.

- **Option 2 - A medium range system for monitoring vacant and potential residential land** - this is a more complex system which would provide details for each individual subdivision in the development approvals

OPTION 1

Land Characteristics	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area						
Unit potential		X	X	X		
Population potential						
Unit/dwelling type		X	X	X		■
Lot sizes						
Land Prices						
Owner name/type						
Servicing status: sewer						■
water						

process in each municipality in the GTA (only municipal summaries would be provided in Option 1), as well as estimates of the total potential number of units of each dwelling type on designated but inactive land in each municipality.

- **Option 3 - Add-ons to provide further information for monitoring vacant and potential residential land** - this is not a system as such, it describes a number of potential add-ons to Option 2 that would provide additional and more detailed information at both the parcel level and, through summation, at the municipal, regional and GTA level as well.

When examining the options for systems, it is important to recognize that there are features of any of the options which could be incorporated into other options as well. There are many more than three options available in designing a land monitoring system for the GTA - Option 3, in itself, is a series of options. What have been outlined here are a range of possibilities offering progressively more detail about the volume and characteristics of vacant land in the GTA; each option has features which could, if desired, be included in either simpler or more detailed options.

To produce GTA-wide results for any of the options, there will be a need for some central body either to co-ordinate the information generated by land monitoring systems already in operation in the regions or to computerize the information at the GTA level. It is not the role of this study to identify the appropriate body to undertake this work so, for simplicity, it is described here simply as the Ministry since it would appear likely the body will be established by some arm of the Provincial government.

OPTION 1: A SIMPLE SYSTEM FOR MONITORING AGGREGATE VACANT RESIDENTIAL LAND IN THE DEVELOPMENT APPROVALS PROCESS

This possible system is quite simple - yet it would provide information which would be extremely valuable for all those interested in the residential land supply situation in the GTA. It would also be relatively easy to implement.

General Description

This system would provide information for each municipality in the GTA on the number of units by dwelling type in subdivisions at the following stages of the development approvals process (see matrix on page opposite):

- Registered - the units remaining unbuilt in registered plans of subdivision (i.e. for which building permits have not been issued);
- Draft approved; and

1989 SUBDIVISION ACTIVITY

	UNITS REGISTERED				UNITS DRAFT APPROVED				APPLICATIONS RECEIVED			
Halton Region Municipalities	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**
Burlington	414	36	205	911	1312	0	857	0	171	0	0	0
Halton Hills	510	0	0	0	310	0	0	0	1286	98	231	189
Milton	65	0	0	0	0	0	0	0	112	0	1	0
Oakville	835	0	82	185	205	0	0	0	323	46	69	80
TOTAL	1824	36	287	1096	1827	0	857	0	1892	144	301	269

ACTIVE PLANS OF SUBDIVISION

DECEMBER 31, 1989

	REGISTERED UNITS -NO PERMIT ISSUED				DRAFT APPROVED UNITS				UNITS IN PROCESS (RECEIVED)			
Peel Region Municipalities	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**	**Single**	**Semi**	**Row**	**Apt**
Brampton					3847	492	535	1688	8844	1054	3092	4464
Mississauga					6583	311	2477	2786	7863	1151	4527	11634
Caledon					1237	0	173	0	3418	340	248	70
TOTAL					*11667*	*803*	*3185*	*4474*	*20125*	*2545*	*7867*	*16168*

- In process - the number of units on the subdivision applications which are in the development approvals process but have not yet been draft approved or registered.

Allied with this information on the **stock** of vacant land, the system would provide information on the **flow** of land through the process; i.e. the number of units which, during the time period, were:

- Registered;
- Draft approved; and
- Submitted as applications into the development approvals process.

The information would be summarized as shown in the sample stock table for Peel (Active plans of subdivision as at Dec. 31, 1989) and flow table for Halton (1989 Subdivision Activity) on the opposite page.

While relatively limited in scope, this information would provide an extremely valuable insight into the volume of residential land in the development approvals pipeline in each part of the GTA. If monitored over time, this land supply information could provide an early warning of the potential for land shortages such as have occurred in the GTA during the recent boom - and in previous boom periods as well.

The system would require that regional municipalities provide the summaries for each municipality to the Ministry which would co-ordinate the information for the GTA. The summary report prepared by the Ministry could usefully compare the volume of building (from CMHC or building permits data) at municipal, regional and GTA levels with the supply of land available for the short-term (registered-no permit and draft approved) and medium-term (in process).

Source of Information

With the exception of Metropolitan Toronto, each of the regions in the GTA have computerized systems set up to monitor subdivision applications. In the case of Metro Toronto, there is very little subdivision activity so this information would be relatively easy to collect. From these systems, each of the regions could produce information on the number of units in subdivisions which were:

- Submitted on development applications,
- Draft approved, and
- Registered

in any period. Also, from the same system, each of the regions could provide the stock of units in process or draft approved at any period. Therefore, with relatively little effort, much of the information required in Option 1 could be obtained for the four outlying regions; to obtain similar information for Metro, a system would need to be established.

ACTIVE PLANS OF SUBDIVISION BY MUNICIPALITY IN THE GTA, DECEMBER 31, 1989

	REGISTERED UNITS —NO PERMIT ISSUED				DRAFT APPROVED UNITS				UNITS IN PROCESS (RECEIVED)			
Municipality	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Single	Semi	Row	Apt
Oshawa					857	286	167	606	1783	586	1292	2930
Ajax					560	0	77	457	1789	132	112	1469
Newcastle	Not Available at time of printing:				782	192	242	48	6451	1792	2230	984
Pickering	To be available by June 1990.				1201	0	87	142	2201	6	250	482
Whitby					1320	0	149	416	3461	256	1305	1305
Brock Twp.					183	12	116	0	776	80	129	0
Scugog Twp.					213	0	0	0	485	70	0	190
Uxbridge Twp.					281	0	44	0	476	0	0	0
DURHAM TOTAL					*5397*	*490*	*882*	*1669*	*16401*	*2922*	*5318*	*7360*
Aurora					816	6	17	0	924	0	427	68
East Gwillimbury					27	0	0	0	2880	0	807	100
Georgina					1583	28	38	0	1140	92	82	100
Markham					3036	803	287	807	1540	882	671	0
Newmarket	Not Available				1110	0	240	502	295	0	112	0
Richmond Hill					4850	0	481	0	8576	120	1089	7254
Vaughan					2567	0	0	0	7789	2	1294	3739
Whitchurch–Stouville					294	0	0	0	1054	0	0	0
King Twp.					306	0	0	0	748	0	0	0
YORK TOTAL					*14589*	*837*	*1063*	*1309*	*21935*	*1096*	*4482*	*11261*
Brampton	Information would require additional				3847	492	536	1688	8844	1054	3092	4464
Mississauga	work.				6583	311	2477	2786	7863	1151	4527	11634
Caledon					1237	0	173	0	3418	340	248	70
PEEL TOTAL					*11667*	*803*	*3186*	*4474*	*20125*	*2545*	*7867*	*16168*
Burlington*					1340	0	857	0	1272	96	411	1681
Halton Hills*					2039	36	0	248	4199	96	428	515
Milton*	Not Available				15	0	0	0	283	0	1	0
Oakville*					221	0	0	0	2070	218	480	80
HALTON TOTAL					*3615*	*36*	*857*	*248*	*7824*	*410*	*1320*	*2276*
GTA TOTAL (Excluding Metro)					35268	2166	5987	7700	66285	6973	18987	37065

* The available information for Halton Region is as of April 30, 1990; data for December 31, 1989 was not readily availabl because an active inventory had not been produced on that date.

To demonstrate the information which is available, a request for the stock of units at each stage in the process for each region (as at year-end, 1989) yielded the information provided on the page opposite for each of the four outlying regions in the GTA - flow information is also available. The table illustrates what can currently be provided by the system already in operation in the regions though in some cases, special tabulations were required since the data are not produced on a regular basis. Additional work would be required to obtain the data for Metropolitan Toronto and the stock of registered lots with no permits in some of the regions in the GTA. These are dealt with separately below:

- **Registered lots with no building permits** - building permit information collected in Durham and Peel; however, it is generally not complied on a regular basis.[6]

  None of the other three regions maintain such an inventory. For these regions, it would be necessary to establish a link between the building permits issued and the inventory of lots available in each registered subdivision. This is a relatively simple process which could easily be incorporated into the computerized systems in operation in York and Halton. There would be both set-up costs (programming the computer and compiling the building permits issued on existing registered subdivisions) and on-going operating costs in maintaining the inventory of unbuilt lots as building permits are issued and clearing the register as subdivisions are built out.

- **Metropolitan Toronto** - subdivision applications and building permits are not currently tracked on an automated system by the Metro Toronto Planning Department. However, the Planning Department is in the process of setting up an automated system for tracking development applications that is expected to be operational by the end of 1990. This would be an opportune time for discussions with the Metro Planning Department to ensure that building permit activity by registered plan number is incorporated into such a system. Given the relatively small volume of subdivision activity in Metro, it should not be difficult to maintain an inventory of vacant registered lots in active subdivisions.

Frequency of Output

The output is updated continuously by all regions except Metro. Therefore, it would be feasible to adopt almost any frequency. Based on discussions with a wide range of potential end users, however, it would appear that a quarterly report would be adequate for most purposes. In times of particularly high levels of activity a more frequent update could be obtained with relatively little effort. While more frequent reporting intervals are obviously advantageous for certain analyses, cost considerations will generally determine the frequency of the reporting intervals: a system that produces monthly results will roughly have two to three times the operating costs of one that produces results quarterly.

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[6] Peel does not currently compile the data for the "registered no permit" stage; this would require a link between Peel's subdivision and building permit information which are in separate databases. Durham is currently compiling the year-end data for 1989.

Implementation Schedule

This is discussed separately for Metropolitan Toronto (assuming it is to be included), the regions of York and Halton, the regions of Durham and Peel and the Ministry:

- **Metropolitan Toronto** - automated information for Metro Toronto will not be available, in the necessary format, until their new system is in place. In setting up the system at Metro, the following steps would be necessary:

    - Obtain lists of the status and number of units of each dwelling type involved in all subdivision applications in the development approvals process in each of the municipalities (Toronto, North York, Scarborough, Etobicoke, York and East York) as at a certain base period date (say year-end, 1989). All municipalities maintain such lists.

    - Have each municipality (or Metro) identify the number of vacant residential lots for which no building permit has been issued in subdivisions approved in the past three years. This is necessary to establish a base year inventory of registered and unbuilt lots for the land monitoring system and is one of the start-up costs of the system. Depending upon the priority attached to this, it could take between two weeks and two months.

    - Arrange that, in the future, the planning department of each municipality continue to forward a list of applications of new projects submitted as well as draft approvals and final approvals. Also, at some regular interval (perhaps annually), the planning departments (or Metro) would have to review the developments which were identified on the system as being fully approved but not having a permit issued to ensure that they are being recorded accurately.

    - Arrange that, in the future, the building department in each municipality forward building permit data (by registered plan number). Lots with new permits issued would be subtracted from the inventory of vacant lots available for building.

  Assuming that all municipalities were co-operative (most will have little subdivision activity), the system could be established and operating within a total period of roughly two months.

- **York and Halton** - much of the information required is already available on computerized development applications systems in these regions. They monitor applications from the time they are submitted until they are registered. Some minor changes might be required to the timing and content of the current output of these systems, but the only significant addition required would be to continue to monitor subdivisions until building permits are issued for all of the units. This could be accomplished by adding a component onto the current systems which would utilize data from the building department of each municipality as outlined above for the Metro system.

The start-up cost of identifying the current inventory of registered and unbuilt lots would still be required as in Metro Toronto.

- **Durham and Peel** - both these regions track building permits as well as subdivisions (in two separate databases), so both can produce an inventory of "registered, no permit" lots. Durham is currently in the process of doing this for their year-end 1989 inventory of registered subdivisions. However, Peel does not currently compile such an inventory - to do so would require additional effort in comparing building permits by registered plan number with subdivisions.

- **The Ministry** - the system required to co-ordinate the inputs from each region could be very simple. The inputs need only to be aggregated and presented in a common tabular format; in addition, any analysis which would accompany the data in a commentary would have to be provided.

Evaluation of Option

The main advantage of this option is that a limited (though extremely useful) set of information could be obtained with an very small outlay in terms of costs. Much of the data is already available at most regions with little or no change necessary in procedures; with relatively minor exceptions, presentation of the GTA results would simply be a matter of coordinating and combining the regional inputs and presenting the results.

The following analysis presents an evaluation of Option 1 from several perspectives:

- **Information generated** - the matrix opposite page 29 illustrated the amount of information which would be generated by the system in relation to the types of information which Chapter 1 indicated could potentially be provided by a land monitoring system.

  Clearly, this option would yield only a very basic level of information when viewed from this perspective. It would provide only the number of units by dwelling type at each stage of the development approvals process in addition to the inventory of registered but unbuilt units. While much of the other information would be available (in a non-standardized form) from regional and municipal planning departments, it would not be generated by this system.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - the information yielded by this system would allow the monitoring of at least part of these requirements: "maintain at least a three year supply of draft approved and/or registered lots and blocks for new residential development at all times". The need to maintain a ten year supply of designated land, the servicing needed to meet the expected demand for this land and any need to monitor the likely future supply of land for affordable housing would not be provided by this type of land monitoring system.

- **Availability of base information** - the information requirements for this system are very basic. In most cases, regional municipalities already maintain a monitor which could provide the information in the required format to the Ministry with relatively little effort. The additional building permit information that would have to be collected in York and Halton would be relatively minor in nature (and cost) compared to any alternatives.

  The main problem relates to information from Metro which would have to be generated essentially from scratch based on lists of subdivision applications and approvals. One possibility might be to ignore Metro which accounts for only a small proportion of the housing units made available through the subdivision approval process until the planned Metro system is established.

- **Quality of the data** - the definitions of dwelling types and the various stages of the development approvals process are generally the same for all of the regions; in some cases, there are minor differences (e.g. the inclusion of a separate category for link dwellings) but these would be easily dealt with.

- **Comprehensiveness of data** - one problem with a system which monitors only subdivisions is that it misses a significant amount of land that is made available for development by processes other than the subdivision approvals process. This is true for all the regions but is most significant in Metropolitan Toronto. Some examples of how land can be made available for development which would not be covered by this system are:

  - **Official Plan Amendments** - potential units on smaller parcels of land redesignated by an official plan amendment would not be captured by this system; where a plan of subdivision is not required after approval has been granted for an amendment, often a building permit is all that is required for development.

- **Rezonings** - similarly, land rezoned for residential use can often be developed immediately with only a building permit (in some cases, site plan control may be required).

- **Consents** - where a consent is granted, several lots could be created where there was only one before.

In all these cases, a system could capture potential units from these processes if designed to do so; however, the subdivision-based process proposed here would not include these potential units.

In Metro Toronto, most of the new land that is available for residential development (primarily multiple land) is created through one of the above processes. Thus the system would not give a good indication of the amount of land available for multiple residential development in Metro. However, in the outer regions in the GTA, most of the land for residential development is processed through subdivision approvals so this system would provide a good indication of the amount of land available in these areas. In total, it would provide a good barometer of the supply of land for low-density housing in the GTA but not for high-density housing.

An additional shortfall of this system is that a significant number of smaller vacant/under-utilized residential parcels in built up areas in the GTA, which could be developed at any time, would not be part of the inventory of vacant lots with no building permit. Estimating the number of these such parcels would be a very labour intensive and time consuming task.

- **Timeliness** - since most of the data are on-line, it would be feasible to have reports almost as often as desired for a relatively small cost. Based on discussions with a wide variety of potential end users, however, it would appear that a quarterly release of the data would be adequate for most users. Once the format in which the regions were to present the data to the Ministry was established and any minor kinks ironed out, it would appear that the data could, without difficulty, be produced within one month of the end of each reporting period.

- **Resource requirements** - the resources likely to be required to set up and operate this system appear to be relatively minor. The estimates of time required to undertake each of the tasks are presented below. They should be considered to be very approximate.

Rough estimates indicate that the following resources would be required to set up the system in Metropolitan Toronto, the regions of York and Halton, the regions of Durham and Peel and the Ministry:

- Metropolitan Toronto - Planning and Building Departments of land municipalities: less than 5 person-days to provide lists of applications in the subdivision approvals process and to identify lots which have

been approved but for which building permits have not been issued, and for building departments to arrange to provide permits on a regular basis. Some of this would be clerical time checking whether permits had been issued in low-density subdivisions - not many in Metro.

Regional level: as well, 2 to 3 days of professional time and 2 to 3 days of clerical time will be needed to design and co-ordinate the set up of the Metro system and to both compile the data and provide it to the Ministry in a standardized form.

- York and Halton - Planning and Building Departments of municipalities: roughly 3 to 4 days of professional time in total (in overseeing the work) and up to 5 days of clerical time (on average per local municipality) to check whether permits have been issued for registered lots in subdivisions.

  Regional level: approximately 2 to 3 days of a professional time and 2 to 3 days of clerical time to co-ordinate the set up of the system and to both compile the data and provide it to the Ministry in a standardized form, and a day of programming time to add this to the existing system if data are provided in computerized form.

- Durham and Peel - minimal effort would be required (1 to 2 professional and 1 to 2 clerical days) since the information is already being collected, though the timing of the reports would need to be co-ordinated.

- Ministry - only 2-3 professional person-days would be required at the Ministry level to liaise with the regions and to design the format in which the output from the Ministry is to be presented.

To **operate** the system, it would appear that the following rough estimates of person-days would apply:

- Metropolitan Toronto - less than one day of professional time per reporting period to oversee the operation and less than 1 day of clerical time to input building permit information by registered plan number on a computer. 'Registered no permit' information would be presented with the 'draft approved' and 'in process' subdivision information sent to the Ministry each quarter.

- York and Halton - roughly 3 to 4 days of professional time per reporting period to oversee the operation plus about 7 to 8 day of clerical time to input building permit information by registered plan number on a computer.

- Durham and Peel - roughly 1 to 2 professional and 1 to 2 clerical days would be needed to produce the information each reporting period.

OPTION 2

Land Characteristics	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
Land area		X	X	X	X	
Unit potential		X	X	X	X	
Population potential						
Unit/dwelling type		X	X	X		■
Lot sizes						■
Land Prices						
Owner name/type		X	X	X		
Servicing status: sewer						■
water						■

- Ministry - 4 to 5 days of professional time and 2 to 3 days of clerical time will be required to assemble the information from the regions and produce a report each reporting period.

In total, therefore, roughly 25 to 30 professional and 25 to 30 clerical person-days would be required to set-up this system and 15 to 20 professional and 20 to 25 clerical person-days would be required to operate the system and provide results each reporting period.

OPTION 2: A MEDIUM RANGE SYSTEM FOR MONITORING VACANT AND POTENTIAL RESIDENTIAL LAND

This possible system provides much more extensive information than Option 1 which dealt only with land in the subdivision approvals process. This more detailed system would add information on the amount of land designated for residential development but for which an application had not yet been received. Also, rather than a simple aggregation of the number of units at each stage in the approval process, this more detailed system would provide a variety of information on each parcel.

General Description

This system would provide summary information on the amount of vacant land (and potential dwelling units) at each stage of the subdivision approvals process as well as designated land for which an application has not yet been submitted (see matrix on page opposite). As in Option 1, it would provide summary stock and flow information on the number and type of units at the following stages of the subdivision approvals process:

- Registered - the units remaining unbuilt in registered plans of subdivision (i.e. for which building permits have not been issued);

- Draft approved; and

- In process - subdivision applications which are in the development approvals process but have not yet been draft approved or registered.

However, unlike Option 1, where only summary information would be produced, the following characteristics of each subdivision would be outlined:

- Subdivision size (in acres or hectares);
- Date subdivision entered each planning stage; and
- Ownership (the name of owner of the land).

This information is already being collected by the various regional planning departments (except Metro).

In addition to this basic information, Option 2 would provide summary information on the number of units available for future development on:

- Inactive, designated land - the total number of units which could be accommodated on land which is designated residential but for which an application has not yet been submitted. Unit type is not always designated in an official plan; unit potential on this land would have to be based on units per hectare as observed in comparable developed areas.

Maps could also be provided which indicate the locations of each of the parcels, however, these would involve a great deal of additional work to complete and are not treated as part of this option.

Source of Information

The main source of information would be the regional planning departments. All regions (except for Metropolitan Toronto) already maintain the information on parcel size, number and types of units and ownership for each parcel in the subdivision approvals process and the date each stage was reached. Therefore, providing the information on the characteristics of land in process, draft approved or registered (with unbuilt units) would be simply a matter of coordinating the presentation of information from each region. Some programming work would be required in all of the regions to provide the information in a common format.

For the inactive, designated land, more work would be required. It would consist of the following steps:

- An Official Plan map or Draft Plan would be used to identify land designated as residential in each municipality;

- Using aerial photographs and other information, all built-up land and land in the development approvals process would be identified and deleted from the analysis;[7]

- The remainder represents inactive residential land;

- Using the zoning by-laws and the Official Plan, and estimates of the land areas involved, estimates of the potential numbers of dwelling units of each type on the inactive, designated land would be prepared.

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[7] Only parcels over some minimum size would be counted since general aggregated numbers are required; an extremely detailed process of identifying all parcels, no matter how small, that could be developed as residential is not being proposed here.

Frequency of Output

As with Option 1, the subdivision specific status information is updated continuously by all regions (except Metro). Once again, therefore, it would be feasible to adopt almost any frequency. Based on discussions with a wide range of potential end users, however, it would appear that a quarterly report would be adequate. In times of particularly high levels of activity a more frequent update could be obtained with only modest additional effort. While more frequent reporting intervals are obviously advantageous for certain analyses, cost considerations will generally determine the frequency of the reporting intervals: a system that produces monthly results will roughly have two to three times the operating costs of one that produces results quarterly.

The estimates of the unit potential on inactive, designated land could be updated continuously based on draw-downs of units as applications are submitted into the development approvals process. These estimates would likely be sufficient for regular reporting periods. The more comprehensive estimates based on the mapping analysis described previously could be undertaken annually given the large manpower (cost) requirements for these estimates.

Implementation Schedule

Subdivision specific information is already available in each of the outer regions for land in process, draft approved, and registered. Minimum effort is thus expected to co-ordinate and publish these results in a consistent fashion in each region.

Estimates of the amount of inactive, designated land are currently prepared in Durham Region on an annual basis. As mentioned previously, this annual stock figure could be updated continuously based on draw-downs of units as applications are submitted into the development approvals process.

For the other regions, however, calculations of the amount of inactive designated land would have to be prepared largely from scratch. The actual estimates should most desirably be undertaken by the planning departments in each of these regions using the process outlined earlier. The time taken to estimate the volume of inactive designated land may vary considerably among regions given differences in geography. As a rough estimate, it is expected that this process would require about 20-30 planners' person days (mostly professional days) in order to establish an initial inventory.

A standard process for calculating the area of large blocks of inactive designated land should be outlined before the process begins in order to ensure the consistency of estimates among regions. The design and implementation of a standard format to be used by each of the regions would likely require 2 to 3 senior person-days from someone at the Ministry.

Evaluation of Option

This option provides more detailed information on land in the subdivision approvals process than does Option 1. In addition, useful information on the volume of designated but inactive land would be provided by this option.

The following analysis presents an evaluation of Option 1 from several perspectives:

- **Information generated** - the matrix presented opposite page 37 illustrates the amount of information which would be generated by the system in relation to the types of information which Chapter 1 indicated could potentially be provided by a land monitoring system.

  Compared to Option 1, more information is being generated about land in the various stages of the planning process; unit volume data on each parcel as well as land area and ownership would now be available. As well, information on designated land not yet in the approvals process would be made available through this option - not available in Option 1.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - the information yielded by this system would allow the monitoring of an additional requirement not possible through Option 1: for municipalities to ensure there is a 10 year supply of residential land it will be essential to monitor designated but inactive residential land.

- **Availability of base information** - the subdivision specific information that this option would provide is already being collected by regional planning departments in the GTA (except Metro); however, it is not currently produced in a standardized format across the regions.

  Additional work would be required for the collection of information on inactive designated land. Durham Planning Department already collects this information annually for its official plan review but is the only region to do so. The information could be collected in a similar manner for the other regions: large blocks of inactive designated residential land are planimitered from maps, and assessment data is sometimes used for smaller blocks. The process requires that land with outstanding development applications and land which is already developed be first identified from aerial photographs and subdivision data already being collected - the remainder being designated inactive land for which reference to zoning by-laws and the Official Plan could yield estimates of unit potential.

- **Quality of the data** - the data on land in the subdivision approvals process would be essentially the same as in Option 1 - with more details. The estimates of inactive designated land are only meant to be rough estimates of the total volume of land designated for development. The data are considered likely to be of a sufficient quality for use in most potential applications.

- **Comprehensiveness of data** - as in Option 1, residential land made available through official plan redesignations, rezonings, and consents would not be covered by this system.

  The focus of the information gathered on inactive designated land would be on greenfield land (exclusive of restricted lands) on the periphery of developed areas. A detailed inventory of all vacant, inactive and designated parcels within urban areas would not be undertaken.

- **Timeliness** - collection of information on inactive designated land does not need to alter the timing from that of Option 1: once a base inventory is established, it could be updated regularly by removing newly active subdivisions as applications are submitted to the approvals process. The base inventory could be updated annually to ensure the accuracy of the estimate, or after any changes to the official plan are made in any region/municipality.

- **Resource requirements** - greater resources would be required to set up and operate this system than were required for Option 1. The estimates of the additional time required (over Option 1) to undertake each of the additional tasks needed for Option 2 are presented below. They should be considered to be very approximate.

  Rough estimates indicate that the following resources would be required to **set up** the system in the GTA, in addition to those already outlined in Option 1:

  - Ministry - 3 to 4 professional person-days would be required to have a standard method for measuring blocks of inactive land outlined and documented for each of the regions. Additionally, 3 to 4 professional days would be required to establish a common format for presentation of subdivision specific information from each of the regions.

  - Regions - based upon past experience in Durham region in doing these calculations, it will take somewhere in the range of 15-20 professional and 15-20 clerical days to identify and calculate the area of designated inactive parcels of land.

    Additionally, 3 to 4 professional days (including programming time) may be required to set up the subdivision monitoring system in each region to produce a standardized subdivision specific output.

  To **operate** the system, it would appear that the following rough estimate of person-days would apply, in addition to those already outlined in Option 1:

  - Regions - each year, or when any new blocks of land are designated for residential development in the official plan, estimates of the amount of land that is designated but inactive would have to be updated. This would involve about 1 to 2 professional and 4 to 5 clerical person-days in each region in updating and checking the detailed inventory undertaken in setting up the system.

- Ministry - an additional cost will be incurred by the Ministry in assembling the information on designated land and on subdivision specific parcels - perhaps 4 to 5 professional days and 4 to 5 clerical days.

In total, therefore, roughly 80 to 90 professional and 60 to 70 clerical person-days would be required to establish the system and 10 to 15 professional and 25 to 30 clerical person-days would be required to operate the system and provide results each reporting period, in addition to the person-days needed for Option 1.

If maps were to be produced showing the location of each subdivision, since subdivision specific information would be produced in this option, there would be a tremendous increase in the estimates of person-days required for this option - person-day estimates would likely double.

OPTION 3: ADD-ONS TO PROVIDE FURTHER INFORMATION FOR MONITORING VACANT AND POTENTIAL RESIDENTIAL LAND

This option describes a number of potential add-ons to the medium range system outlined as Option 2. Each of these possible add-ons could be incorporated separately and are completely independent. The potential add-ons covered here include:

- **Lot sizes** - one possible add-on is to provide information on lot sizes for freehold units (usually expressed in front feet).

- **Servicing** - information on the nature of potential servicing problems for individual subdivisions could be provided by local planners.

- **CMHC data** - another add-on might be to incorporate CMHC data into the system for use in "clearing the register" of unbuilt lots and for following lots further through the development process.

- **Parcel specific information on inactive land** - more detailed information on each of the parcels that make up the inventory of inactive designated land is another possible add-on.

- **Official Plan Amendments, Rezoning, and Consents** - another add-on might be to monitor potential units which are created through offical plan amendments, rezonings and consents - not covered in a subdivision application based system.

Each of these possible add-ons is outlined and evaluated in the sections that follow. Estimates of the resource requirements for implementation of each add-on are based on the **additional** resources that would be needed over Option 2.

Lot Sizes

Options 1 and 2 would provide information on the number of units of each dwelling type at each stage in the subdivision approval process. For analysis of the supply of land available for different sizes or prices of housing, this information would be too aggregated to be of assistance - it would cover the overall supply of land for single-detached houses, for example, but would not distinguish between land for smaller, affordable houses and larger, more expensive ones.

Data on the sizes of lots in the subdivisions at each stage of the approval process would provide this information. To obtain it, the plan for each draft approved and registered subdivision (lot sizes are not usually known before this stage) must be examined and the sizes of lots recorded. Some allowance would need to be made for odd-shaped lots as well. Depending on the degree of accuracy required, this could be a very labour-intensive task.

The output would include information on the number of lots of each size (30, 35, 40 foot frontage, etc.) at each stage of the approval process. If undertaken in concert with the previous options, the information could be compiled and updated as subdivisions are draft approved or registered; the data could then be produced at the same frequency as the other data if recoreded in this manner.

The value of this information in a land monitoring system from the same perspectives on which Options 1 and 2 were evaluated is presented below:

- **Information generated** - information on the number of lots of various sizes would be provided for the draft approved and registered stage of each subdivision with municipal, regional and GTA aggregates as well.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - since affordable housing is generally built on smaller lots, the information yielded by this system would allow the monitoring of the likely future supply of land for affordable housing.

- **Availability of base information** - currently, none of the regional municipalities monitor lot sizes in subdivisions. Thus the information would have to be compiled manually from registered plans and draft plans.

- **Quality of the data** - the data would come from a 100 percent sample of all subdivisions so it would be of good quality; the only problem would be in classifying unusually sized lots into standard front footage categories.

- **Comprehensiveness of data** - since all lots would be counted, the data would be very comprehensive.

- **Timeliness** - since collection of this data will be a fairly labour intensive and time consuming process (and therefore very costly), it would appear that an annual update of lot size information would suffice. Given the time it takes to go through the approvals process, annual updates should be frequent enough that most subdivisions are captured.

  One possibility which may make more frequent reporting possible would be to have fields set aside in each of the regions' databases for lot size information on each subdivision; however, there are a limited number of additional fields available in some of the regions' systems and this may not be possible in each region.

- **Resource requirements** - producing this add-on would be a fairly time consuming process. Estimates of the time required to implement this add-on are provided below.

  Rough estimates indicate that the following resources would be required to **set up** this add-on:

  - Ministry - roughly 3 to 4 professional person-days would be required at the Ministry level to liaise with the regions and to design the format in which this additional information is to be incorporated into the system.

  - Regions - approximately 2 to 3 professional days will be needed to design and co-ordinate the set up of this add-on. If the lot size information is to be incorporated into the automated subdivision monitoring system in any region, then there would also be an additional day of programming time required.

  To **operate** the system, the following rough estimates would apply:

  - Regions - based on past experience in compiling lot size information, it is estimated that it would take one person between 1 and 1.5 days per municipality to add up the number of lots by size in each subdivision. Thus, it would take somewhere in the range of 30 to 45 person-days to compile all the information for all 30 municipalities in the GTA. This could be done by having one person (a clerk or possibly summer students) from each region to compile the information from existing maps. The information would then have to be entered into a field in each subdivision record in order that the information remain subdivision specific.

About 1 to 2 days of senior staff time would be needed in each region to oversee the collection of the information.

- Ministry - a relatively minor additional cost will be incurred by the Ministry in assembling the information on designated land and on subdivision specific parcels - perhaps 1 to 2 senior staff days and 1 to 2 clerical days.

In total, therefore, roughly 15 to 20 professional person-days would be required to set-up this add-on and 10 to 15 professional and 40 to 50 clerical person-days would be required to operate the system and provide results each reporting period.

Servicing

A major potential constraint on the development of residential land that is not covered by Option 2 is the presence of servicing constraints. Servicing constraints, particularly pipe capacity or treatment plant capacity, can often be a major factor in hindering the supply of land available for development; this in turn can lead to rising land prices and often severe affordability problems.

Identification of potential servicing constraints can be a very subjective process: it is not always obvious which parcels can be easily serviced (it may depend on servicing activity on neighbouring parcels) and when servicing will be available. As well, servicing methods and problems vary among the regions. In Halton, for example, servicing costs are paid up-front by developers, with the money recovered on a "fair share" basis as new developers enter the scheme. Under this type of scheme, if a developer is willing to put up enough money, large areas where development may have been expected can be "leap-frogged" as the developer services his/her own property. Thus it is not always possible to determine which parcels can or will be serviced - it depends upon what developers are willing to pay.

There are a number of ways in which potential servicing problems could be examined through a land monitoring system. One possible solution to the problem of identifying possible servicing constraints is to have local planners - who have detailed knowledge of specific projects in their respective area - identify those projects which may face servicing difficulties. This could be done by asking them the following series of questions:

"Is this subdivision currently fully serviced?"

____ Yes ____ No ____ Don't Know

"If not, do you anticipate that servicing difficulties could cause this application to be delayed?

___ Yes ___ No

If you answered "Yes" above, what type of servicing problem is expected?

Problem Type	Pipes	Capacity
Water		
Sanitary Sewer		
Storm Sewer		

This information could be compiled as each subdivision application is submitted with periodic (possibly annual) updates for each subdivision.

The value of this add-on is evaluated from a number of perspectives below:

- **Information Generated** - subdivision specific information on actual servicing and potential servicing problems would be made available through this add-on. This would be useful in establishing which particular areas face servicing problems and the nature of those problems. Aggregated, the information would provide background on the potential for servicing problems to constrain the supply of land in the subdivision approvals process.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - the information generated would be instrumental in identifying "the capacity of existing services to handle short, medium and long-term growth". Clearly, identification of potential servicing problems early in the planning process would be invaluable in planning for servicing infrastructure which can take many years to construct.

- **Availability of base information** - this type of information is currently not being collected in any municipality. However, local planners have a great deal of knowledge about the projects they are involved with and, with little effort, could give an indication of potential servicing problems.

- **Quality of the data** - although planners are not technical experts on servicing, and may not be fully aware of all potential servicing problems or overall system capacity, it is expected that they would be fairly well informed about these issues and could provide information that is reasonably accurate.

- **Comprehensiveness of data** - the data would cover each proposed subdivision in the GTA and would also indicate the exact type of potential servicing problem expected. This add-on would not provide information on actual servicing (i.e. when the lots are fully serviced).

- **Timeliness** - this information could be compiled as each subdivision application is submitted with periodic (possibly annual) updates for each subdivision that has yet to be developed.

- **Resource requirements** - the resources that would be required to set up and operate this potential add-on would not be overly large. Estimates of the time required to implement this add-on are provided below.

  Rough estimates indicate that the following resources would be required to **set up** this add-on:

  - Ministry - roughly 3 to 4 professional person-days would be required at the Ministry level to liaise with the regions and to design the format in which this additional information is to be incorporated into the system.

  - Regions - about 1 to 2 professional person-days in each region would be needed to organize the collection of this information from each of the local municipalities in the GTA.

  - Local Municipalities - about 1 day of senior time at each municipality to organize the provision of this information.

  To **operate** the system, the following rough estimates would apply:

  - Ministry - about 1 to 2 senior staff days and 1 to 2 clerical days will be needed to incorporate the additional servicing information for each subdivision for each report that is produced.

  - Regions - about 1 day of clerical time for entry of information from each municipality into computer for each subdivision and one senior staff day to oversee the data collection and report production for each reporting period.

  - Local Municipalities - about 1 person-day of local planner time for each municipality, on average, would be needed to provide this additional information for each reporting period. It is only intended here that planners provide information readily available to them - extensive research is not being proposed.

  In total, therefore, roughly 35 to 40 professional person-days would be required to set-up this add-on and 30 to 35 professional and 5 to 10 clerical person-days would be required to operate the system and provide results for each reporting period.

CMHC Data

Another possible add-on is to incorporate CMHC data into the land monitoring system. This could help in overcoming the building permit information problem currently faced in Option 2 and Option 1 (not all of the regional planning departments currently collect building permit information) as CMHC collects this information on a monthly basis from each of the municipalities in the GTA.

The value of incorporating CMHC data into a land monitoring system is evaluated from a number of perspectives below:

- **Information generated** - use of CMHC data on building permits could be used in "clearing the register" of lots for which permits had been issued. In addition, other CMHC data could be incorporated on a subdivision specific basis once the link-up through building permits had been achieved. Municipalities could then have information on when construction was started, completed, and when the unit was absorbed. As well, CMHC also collects price information at the completion stage (although collecting the information at the start stage is being contemplated) which could be incorporated into the system. These additional pieces of information are not of particular interest in terms of land supply monitoring, but would nonetheless be quite useful for a number of other purposes.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - the additional information provided by this option - namely, information on subdivision activity after a building permit has been issued - is not required for the Policy Statement. However, the tie-in to price and possibly lot size information could assist in monitoring the types of development produced.

- **Availability of information** - building permit data for each municipality in the GTA is already being collected on a monthly basis by the CMHC Toronto Branch on the automated national system, except for the Township of Brock which is not part of the Toronto CMA or Oshawa CMA (and therefore not on the automated national system, although the information is being collected manually) and the City of Burlington, which is part of the Hamilton CMA. Data for Burlington would have to be collected from the CMHC Hamilton Branch.

  This monthly information could be provided in machine-readable format for each of the regions by CMHC so that the information could be relatively easily combined with the existing subdivision databases (through the registered plan number of each subdivision).

- **Quality of the data** - CMHC data is based on a 100 percent sample of building permits in each municipality and 100 percent of all starts, completions and absorptions are surveyed.

- **Comprehensiveness of data** - all municipalities and all subdivisions would be covered by CMHC data.

- **Timeliness** - since the information is being collected on a monthly basis by CMHC, there would be no difficulty in using the data for monthly or quarterly reports. There would likely be a time lag between the time information was received by CMHC and when it could be made available for use by each of the regions.

- **Resource requirements** - since the data are already being collected on a monthly basis by CMHC, the resources needed will be those for setting up and distributing the data to the regions. Rough estimates of the time that would be required to incorporate CMHC building permit information are presented below.

  Rough estimates indicate that the following resources would be required to set up the system for the GTA:

  - CMHC - before CMHC data can be combined with the subdivision specific information available in Option 2, the two data sets need a common link - this would be the registered plan number of the subdivision. Currently, CMHC does not enter the registered plan number of subdivisions into their database, although the information is available on the building permits that they receive.[8] There are expected to be some set-up costs for CMHC in ensuring that the registered plan number for building permits in subdivisions is given for each municipality and entered into their database. It will probably take 4 to 5 professional person-days to arrange to have the registered plan numbers for building permits added to the database for the Toronto Branch and Burlington for the Hamilton Branch. As well, 4 to 5 professional person-days will be required to organize that registered plan numbers be collected for all the municipalities in the GTA.

  - Regions - about 5 professional person-days per region will likely be required for the organization of the use of CMHC's data. This may include programming time to arrange for the incorporation of CMHC data into the existing subdivision monitoring system.

  - Ministry - 1 to 2 professional days will be needed to organize the collection of the data from CMHC by each of the regions and to arrange for it to be produced in a standard format from each region.

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[8] There may be some isolated cases where municipalities do not enter this information on all building permits, but there should not be problems in having it entered on each permit in the future if requested. This was confirmed by a review of building permit data received by the CMHC Toronto Office.

Rough estimates indicate that the following resources would be required to **operate** the system for the GTA:

- CMHC - Staff time from someone with technical expertise at CMHC's National Office will be required to arrange for the building permit data to be down-loaded into and ASCII file for use by each of the regions. This should take in the range of 1 to 2 person-days for each time that an update is required. The marginal cost to CMHC of having the registered plan number entered on an ongoing basis in the future is expected to be almost negligible.

- Regions - about 1 professional and 1 clerical person-day per region will be needed to link up CMHC data with the region's subdivision information for each reporting period.

- Ministry - roughly 1 to 2 additional professional days and 1 to 2 additional clerical staff days will be required for the incorporation of CMHC's information into each report.

In total, about 30 to 35 professional person-days will be required to set up the add-on system, and about 5 to 10 professional days and 5 to 10 clerical person-days will be required to operate the system each reporting period.

Parcel Specific Information On Inactive Land

The information generated on designated but inactive land in Option 2 did not provide parcel specific information, but rather a rough estimate of the net area available for residential development. A possible add-on to Option 2, then, might be to replace these rough estimates with a detailed estimate. The detailed estimate would require that all vacant parcels (over a certain minimum size) be identified and information on the exact developable area of each be gathered. Collecting this information on a parcel by parcel basis would also result in ownership information being made available for land in the inactive designated stage.

The following analysis presents an evaluation of this add-on from several perspectives:

- **Information Generated** - this potential add-on provides three pieces of information not provided through Option 2: one is accurate information on the area of individual parcels of land in the designated inactive stage; another is parcel specific unit potential information for inactive land; finally, ownership information on each inactive parcel is provided.

- **Municipal requirements for the Land Use Planning for Housing Policy Statement** - provision of parcel specific information on inactive designated land will have little additional value over aggregate estimates in meeting the long-term planning requirements of municipalities that at least a ten year supply of residential land be maintained.

- **Availability of information** - parcel specific information on inactive designated land is not currently collected by any of the regional municipalities. To get this information, the necessary data would have to be collected in the following manner:

    - official plan maps would be needed to identify those areas which have been designated for residential development
    - assessment files and maps could be used to help identify all vacant parcels; assessment files have ownership information
    - aerial photographs could also be used to identify vacant parcels
    - those with plans of subdivision, as identified through Option 2, would have to be removed from the inventory
    - each parcel would have to be surveyed in order to ensure that the information was current and accurate (assessment parcel size information is not always accurate)
    - the remaining land area would be designated inactive land

    None of this information is readily available and thus a significant investment of resources would be required for its collection.

- **Quality of data** - having detailed information about the size of each parcel of land in the designated inactive stage will improve the accuracy of the estimate of the amount of this land.

- **Comprehensiveness of data** - each parcel of inactive land would be covered so the data would be fully comprehensive.

- **Timeliness** - the detailed information on each parcel will be costly to collect. Therefore, an update could be done annually and the same "draw-down" method outlined in Option 2 could be used for gross area estimates for each additional reporting period (parcel specific information would not be available with the draw-down method).

- **Resource requirements** - the resources needed to provide detailed information on designated inactive parcels would be quite substantial. Rough estimates of the time required to include this add-on to a land monitoring system are discussed below.

Rough estimates indicate that the following resources would be needed to **set up** the system for the GTA:

- Ministry - the Ministry will need to outline a standard format for collecting the necessary information for each of the regions. This is expected to take 3 to 4 professional person-days.

- Regions - the necessary person-days to establish an initial inventory will vary substantially among regions. It is estimated that at least 30 person-days (primarily clerical or student) will be required to set up the initial inventory in each of the outer Regions and perhaps 7 to 8 days for Metro. Summer students could be used in establishing this inventory, with the process overseen by professional staff at each region.

Rough estimates indicate that the following resources would be needed to **operate** the system for the GTA:

- Ministry - about 1 to 2 additional professional days and 1 to 2 additional clerical staff days will likely be required at the Ministry for the incorporation of parcel specific information on inactive into the system for each report.

- Regions - once an initial inventory has been established, updating it would not be as costly in terms of person-day requirements. A total of roughly 15 person-days is estimated to be necessary for an update of the designated inactive inventory in each of the regions (except Metro which would be much lower).

In total it is expected that 25 to 30 professional days and 100 to 110 clerical person-days would be required to set up this add-on, and 10 to 15 professional and 50 to 55 clerical person-days would be required to operate the system and provide results for each reporting period.

Official Plan Amendments, Rezonings, And Consents

A land monitoring system that is based on the subdivision approvals process alone would not capture a significant amount of land that is made available for residential land through other processes such as official plan amendments, rezonings, and consents. To be more comprehensive, a system would have to be developed to track these approvals.

Official plan amendments, rezonings, and consents would have to be tracked in each region at the application stage; the information collected could include unit potential (when this is known), dwelling type, ownership and land area. Currently, only two of the regions in the GTA, Durham and Halton, monitor unit potential from these activities. Thus, to get data for the GTA would require that each region begin collecting this information.

The value of incorporating this add-on to a land monitoring system is evaluated from a number of perspectives below:

- **Information generated** - this potential add-on would provide information on land being made available for residential development through processes other than the subdivision approvals process. In the case of Metropolitan Toronto, this would represent the vast majority of the new land.
- **Municipal policy statement** - since the subdivision approvals process would only account for a portion of the land being developed, estimates of the number of years supply of this land - to meet the requirements of the Policy Statement - may tend to be too low. Thus, information on official plan amendments, rezonings, and consents would tend to improve these estimates.
- **Availability of base information** - currently, only Durham and Halton collect unit potential information for these activities. Peel monitors consents, but does not track unit potential by dwelling type at this time - resources would have to be committed to do so in the future. York also monitors consents, but only in three of its nine municipalities. The development monitoring system being set up by Metro will track official plan amendments and rezonings, but not consents.
- **Quality of the data** - the definitions of dwelling types are generally the same for all the regions so there would be little difficulty in compatibility among the regions if the data were collected.
- **Comprehensiveness of data** - adding new land created through official plan amendments, rezonings, and consents would greatly increase the comprehensiveness of the system. The only other significant potential source of residential land that would then be missed by the system would be parcels of land in built up areas that already have official plan and zoning in place. While monitoring land in the subdivision approvals process (as in Options 1 and 2) is considered adequate for providing a realistic assessment of the supply of land for low-density housing, this add-on would be required to monitor activity in multiple (particularly high-density) residential land.
- **Timeliness** - since the turnover of these applications can be quite fast, quarterly or even monthly reporting would appear most useful. As well, because the turnover is rapid, **flow** information will be important as well as **stock** information.
- **Resource requirements** - the resources that would be needed to set up and operate this potential add-on would be quite significant.

Rough estimates of the person-days needed to set up the system are as follows:

- York, Peel and Metro - resources would have to be committed to monitoring unit potential from consents, rezonings and official plan amendments throughout the region. About 5 to 10 professional person-days would be required in each region to organize a system for collecting information on the three approvals processes from each municipality in the region. As well, 1 to 2 person-days of a programmers time will be needed in each region to set up a regional system for tracking these activities on a regular basis.

- Ministry - about 2 to 3 professional days will be needed to organize that the information being collected in each of the regions is done so in a consistent manner.

To operate the system, it would appear that the following rough estimates of person-days would apply:

- Regions - about 3 to 5 days of clerical time will be needed each quarter in each region to have incoming data from the various municipalities entered onto a computer system. As well, less than 1 senior staff day and less than 1 clerical day will be needed to produce a quarterly output for submission to the Ministry.

- Ministry - about 2 to 3 senior staff days and 1 to 2 clerical staff days will likely be required for the incorporation of the additional information into quarterly reports.

Altogether, about 30 to 40 professional person-days would be required to set up the system and about 8 to 10 professional and 15 to 20 clerical person days will be required to operate the system and provide results each reporting period.

APPENDICES

APPENDIX A

REVIEW OF LAND MONITORING SYSTEMS IN OTHER CENTRES

INTRODUCTION

This appendix reviews the residential land monitoring systems examined in Canadian and U.S. urban areas. While this survey is not a comprehensive study of all systems in operation, it is meant to highlight different approaches taken in various cities and regions. The purpose of investigating these systems is to outline strengths and weaknesses of each approach as a background to assessing which methodologies could be applied in an ongoing land monitoring system for the Greater Toronto Area.

Range of Systems Investigated

Land monitoring systems in use in the following Canadian centres were examined in the course of this investigation:

- Calgary
- Edmonton
- Kitchener-Waterloo
- London
- Ottawa-Carleton
- Oxford County, Ontario
- Winnipeg

These centres were selected as being representative of the range of systems in operation in Canada today. In addition, a U.S. centre which has a more sophisticated land monitoring system was examined in order to demonstrate the types of information that can be obtained from this type of system.

The systems in use in the centres examined range from simple monitoring of building permit activity in Registered Plans of Subdivision to sophisticated Geographic Information Systems for monitoring a vast range of potential and actual development (among other things). The municipalities and regions involved vary in many aspects including size (population and geography), political and economic environment, and the financial and human resources available to devote to land monitoring systems. Consequently, a system well-suited to one centre may not be optimal in another.

To facilitate the analysis, the land monitoring systems examined were grouped in the following broad classifications ranging from relatively simple to very complex:

- Monitor of Registered Plans only

  These relatively simple systems only monitor land in Registered Plans of Subdivision. Subdivision plans at either the pending or draft approved stage, as well as residential lands that have no plan of subdivision, are not tracked. The monitoring system operating in London, Ontario is the only system examined in this category.

- Monitor of Plans at various planning stages

  These systems monitor land in all plans of subdivision regardless of the stage in the planning process. Some cities also include information for blocks of land with future residential potential that presently have no plan of subdivision (inactive land). The monitoring systems operating in Calgary, Edmonton, Kitchener-Waterloo, Ottawa-Carleton and Winnipeg are profiled in this category.

- Complex Geographic Information Systems

  These systems can include all land with residential potential. The systems examined in this category are the system's proposed for Oxford County, Ontario, and San Diego, California.

To facilitate the analysis, a system information summary chart (called "Summary - Residential Land Monitoring System") has been developed to provide an overview of each system examined. Each chart is accompanied by a brief description which highlights some of the more important facets of the land monitoring system being examined in each centre. A brief description of this summary chart is provided next, prior to the discussion of the systems in each of the centres identified previously.

Also, to assist the uninformed user, a glossary of terms used in this analysis is provided as Appendix D.

SUMMARY – RESIDENTIAL LAND MONITORING

A

Municipality/Region:
Phone:
Contact:

B

Name of System:
Updating Frequency:

C

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
- land area						
- unit potential						
- population potential						
- unit/dwelling type						■
- zoning						■
- lot sizes						■
- lot frontages						■
- owner name						
- ownership type						
- servicing status: sewer						■
water						■

D

DATA SOURCES		Assessment Records	
Subdivision Maps/Records		Building Permit Info.	
Zoning Maps/Records		Aerial Photos	
Rezoning Records		Field Surveys	
General Plan Designation		Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps			

E

WHO INPUTS DATA?	
Planning Dept.	
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

F

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision ___

Neighbourhood/Community ___

If parcel, min. parcel size:

Coverage: City/Municipality ___ Regional ___

G

SYSTEM SET-UP

Hardware:

Software:

Mapping:

Future:

H

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	

I

SYSTEM STRENGTHS

SYSTEM WEAKNESSES

SYSTEM INFORMATION SUMMARY CHART

The standard information summary chart which has been prepared to highlight the major features of each of the land monitoring systems examined is shown opposite. The purpose of the chart is to provide a simplified and easy-to-read summary of the major facets of each of the land monitoring systems examined.

The standard chart is divided into ten sections which can be summarized as follows:

Section	**Purpose**
A	The centre or region involved in land monitoring; a phone number and contact person for further information.
B	The name of the monitoring system and its updating frequency.
C	Main body of the chart which identifies the characteristics of land monitored in each of the various stages of the development process.
D	Sources of data utilized for the system.
E	The department responsible for inputting and updating information on the system.
F	The scope of the system in terms of the basic units of observation and the spatial coverage.
G	The system set-up used for storing and manipulating the data; plans for future systems.
H	The types of reports and summaries which are produced.
I	The monitoring system's major strengths and weaknesses.

MONITORS OF REGISTERED PLANS ONLY

These systems cover only Registered Plans of Subdivision and do not include land designated residential which is in other stages of the planning process or inactive. Hence they only provide a picture of residential land that is ready for dwelling construction to begin.

The major characteristic monitored is the unit potential by dwelling type for each Registered Plan of Subdivision. This information is commonly aggregated and provided at the neighbourhood/community level. The information is used in co-ordination with building permit data to determine the remaining availability of residential lots within given plans. Once a building permit has been issued for a lot, it is removed from the system. The subdivision itself is monitored until all of its residential lots and blocks have had building permits issued.

Generally, the data collection involved is minimal and relatively simple. In the case of London, the building permit information is readily available on-line from the Building Department. The only labour involved is to delete the lots with a building permit from the vacant lot inventory of each respective plan of subdivision. In the case of London, this is done on a monthly basis. Generally, the system is quick and simple, and it provides a very basic level of information in a relatively low-cost manner.

The major drawback to this type of system is that the amount of planning-related information captured by the system is minimal. Thus, minimizing the labour and input costs results in the minimization of information output by a system.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: CITY OF LONDON
Phone: (519) 661-5457
Contact: Howard Pulver, Community Improvement Div.

Name of System: Inventory of Undeveloped Serviced Residential Land
Updating Frequency: Monthly

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
- land area						
- unit potential		X				
- population potential						
- unit/dwelling type		X				■
- zoning						■
- lot sizes						■
- lot frontages						■
- owner name						
- ownership type						
- servicing status: sewer						■
water						■

DATA SOURCES		Assessment Records	
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	
Rezoning Records		Field Surveys	X
General Plan Designation		Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	X
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision X
Neighbourhood/Community ___
If parcel, min. parcel size:
Coverage: City/Municipality X Regional ___

SYSTEM SET-UP

Hardware: Sperry Mainframe
Software: On-line report generation
Mapping: None
Future:

TYPES OF OUTPUT	
Subdivision status report	X
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	

SYSTEM STRENGTHS

- Minimal data collection effort (2 person-days per month).
- Provides quick picture of residential land ready for development.

SYSTEM WEAKNESSES

- Minimal information provided.

CITY OF LONDON, ONTARIO

General

All vacant residential land within Registered Plans of Subdivision for which no building permit has been issued is included in the system. Once a building permit is issued for a given lot, it is removed from the system. Vacant residential land that is in other stages of the planning process, or land that has potential for residential units through infilling, redevelopment, conversion or intensification is not monitored.

The system covers only land within London city limits. The London CMA includes the cities of London and St. Thomas, plus ten other smaller municipalities. Based on CMHC housing starts and completions data, the City of London accounted for about 85 percent of housing starts and completions in the London CMA for the years 1988 and 1989.

Dwelling starts by type for the City of London in 1988 and 1989 were as follows:

	1988	1989
Single Family	1,394	1,636
Semi-Detached	144	106
Row	836	715
Apartments	1,695	1,513
TOTAL	4,069	3,970

The latest monthly inventory of undeveloped serviced residential land in London (Attachment 1) had the following unit potential:

Single Family	1,471
Semi-Detached	33
Row	1,336
Apartments	2,529
TOTAL	5,369

Data Collection

The only data collected using London's approach is the lot potential by dwelling type for each Registered Plan of Subdivision. This information is provided on the subdivision plan maps.

Following plan registration, the Planning Department monitors computerized on-line building permit data which is readily available from the Building Department. As a building permit is issued for a given lot, the subject lot is considered built and taken off the Registered Plan available lot inventory. Field surveys are used to verify the extent of development at subdivision sites.

ATTACHMENT 1

INVENTORY OF UNDEVELOPED SERVICED RESIDENTIAL LAND
PLANNING DISTRICT AND SUBDIVISION BY UNIT TYPE
MARCH 1990

PLANNING DISTRICT S.P.	PLANNING DISTRICT	SINGLE	SEMI	ROW	APT.	TOTAL
ARGYLE						
M201	HUDSON DRIVE ESTATES	4	0	0	0	4
M203		63	0	0	0	63
M207	BONAVENTURE	106	3	0	0	109
M208	BONAVENTURE	32	0	33	0	65
M226	BRAMAR SUBDIVISION	6	0	0	0	6
M230	CONDON COURT	16	0	95	0	111
M240	BONAVENTURE MEADOWS	0	23	186	0	209
TOTAL		227	26	314	0	567
BYRON						
M122	WARBLER WOODS	15	0	0	0	15
M196	CADEAU TERRACE	0	0	21	0	21
M228	WARBLER WOODS	36	0	0	0	36
M232	LONGVIEW COURT	30	0	0	0	30
M233	SEPTEMBER LANE	9	0	0	0	9
TOTAL		90	0	21	0	111
CARLING						
TOTAL		0	0	0	0	0
CENTRAL LONDON						
TOTAL		0	0	0	0	0
EAST LONDON						
TOTAL		0	0	0	0	0
GLEN CAIRN						
M209		0	0	230	0	230
M24	THAMES AVON II	0	0	0	64	64
TOTAL		0	0	230	64	294
HAMILTON ROAD						
M210	RIVER RUN SUBDIVISION	24	0	0	0	24
TOTAL		24	0	0	0	24

Zoning and Official Plan maps are used to estimate the unit potential for unsubdivided blocks within Registered Plans of Subdivision.

System Strengths

The advantages of this type of system include:

- System minimizes data collection work for Planning Department; data used are readily available;
- Provides a quick picture of what residential land is immediately available for development; and
- For centres with steady demand and an ample supply of land, this type of simple system may be adequate.

System Weaknesses

The major weakness of this type of system is that very limited data is provided. Information on land area, ownership of registered plans and land at other stages of the development approval process is not given.

MONITORS OF PLANS AT VARIOUS PLANNING STAGES

These systems include Plans of Subdivision at all stages of the planning process and may include information on land designated residential with no plan of subdivision (inactive land). Compared to systems which cover only registered plans, these systems are more comprehensive and provide a broader picture of the supply of vacant residential land that will be available for housing development. Generally, these systems do not assess very small infill parcels, or occupied land with potential for additional residential units as a result of redevelopment, conversion or intensification. The land monitoring systems operating in the following centres are reviewed in this category: Calgary, Edmonton, Kitchener-Waterloo, Ottawa-Carleton and Winnipeg.

Generally, the major characteristic monitored by this type of land monitoring system is unit potential by dwelling type. However, these data are divided among the various planning stages the subject lands have reached. This subdivision information is also aggregated and provided at either the neighbourhood/community level, or by settlement area, traffic zone or census tract. Other information sometimes collected by such systems includes ownership, servicing and land area.

The data collection process is generally on-going or annual with reports on a quarterly, semi-annual or annual basis. This type of monitoring effort is more of an integral part of the local planning process when compared to systems which cover registered plans only, and is therefore, more comprehensive and time-consuming to maintain.

These systems provide a solid base for further system expansion as the demand for more planning information grows. In each city examined in this category, the residential land inventory is supplemented with information from other sources though the information is not linked with the subdivision specific data. Types of supplementary data provided include:

- Residential land servicing activity per year;
- Building permit and/or construction activity;
- Information on the existing dwelling stock;
- Existing land use and zoning information;
- City-wide measure of residential land with infill, redevelopment or intensification potential; and
- Estimate of demand for residential land based on land consumption trends and residential development densities.

All five systems provide a relative timeframe for the staging of residential development based on the planning status of each subdivision, but only the Edmonton and Ottawa-Carleton systems make any attempt to combine this with servicing data to provide an inventory of subdivided and serviced lots in years using actual and projected absorption rates.

All systems are capable of providing data at disaggregated geographic levels.

A more detailed review of each system follows.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: CITY OF CALGARY	Name of System: Residential Land Survey
Phone: (403) 268-5334	
Contact: Ernie Park, Planning & Building Dept.	Updating Frequency: Annual

Characteristics Included: (by development status)	VACANT LAND					
	Designated					Undesignated***
	Permit Issued	Registered	Draft Approved*	In Process**	Inactive**	
- land area		X	X	X		X
- unit potential		X				
- population potential		X	X	X		X
- unit/dwelling type	X	X				■
- zoning		X				■
- lot sizes						■
- lot frontages						■
- owner name						
- ownership type						
- servicing status: sewer						■
water						■

* Land in areas with approved planning studies.

** Land for which planning studies are underway.

*** Land not approved for development.

DATA SOURCES		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records	X	Field Surveys	X
General Plan Designation		Land Titles Info.	X
Public Works (Servicing)		Other: CMHC Starts and Completions;	
Land Use Maps		Civic Census	

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ____ Subdivision X Neighbourhood/Community X

If parcel, min. parcel size:

Coverage: City/Municipality X Regional ____

SYSTEM SET-UP

Hardware:	IBM Mainframe
Software:	In-house GIS
Mapping:	Computer
Future:	New GIS

TYPES OF OUTPUT

Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	X
Other report(s):	

SYSTEM STRENGTHS

- Provides subdivision-specific data on vacant residential land, subdivision registration, building permit and construction activity.
- Assesses the total potential for future residential development in terms of land area and population at the city sector and city levels.

SYSTEM WEAKNESSES

- No data on unit potential for land until it is registered; when registered, only provides land acreage.
- No information on land ownership and subdivision servicing.

CITY OF CALGARY, ALBERTA

General

The system covers land at various stages of development but with varying degrees of detail:

- For land which has not been registered, only limited information such as the total gross acreage and an estimate of the potential future population is provided for each of the eight planning sectors in the City (Attachments 1 and 2). This "potential land" is disaggregated into three categories: land in areas with approved planning studies, land for which planning studies are underway, and land not approved for development. This covers a total area of over 20,000 acres with a population potential in excess of 300,000 - with Calgary's starts in 1989 of roughly 6,000 units, this represents a vast potential.

- Registered land that has not yet been built upon has a greater amount of detail. Each subdivision registered in the previous year is identified as well as construction activity in these and other subdivisions (Attachments 3 and 4). The vacant lot inventory showing vacant acreage and number of vacant sites (but not unit potential) by zoning category (R1, R2, etc.) are presented for each subdivision as are aggregates for each planning sector (Attachment 5). The estimated population potential on these lands is roughly 30,000 (Attachment 2).

- For occupied land, estimates of the potential additional population are presented, but these are gross aggregates only (Attachment 2).

The system covers only land within the Calgary city limits. The City accounted for 95 percent of the housing starts in the Calgary CMA in 1989.

The Calgary Residential Land and Housing Survey is an annual report produced by the Planning Department. In addition to the land supply information described above, this report also presents information on:

- Annual land subdivision (acres) and lot registration (number of lots) activity in the city.

- Dwelling units completed and under construction.

- Number of occupied and vacant dwelling units.

- Building permit applications for new dwelling units.

After 19 years of using this system, Calgary is implementing a new Geographic Information System this year.

ATTACHMENT 1

Vacant Land with a Residential Use Potential and the Estimated Population Capacity of All Residential Lands

Vacant Land in Peripheral Areas with Residential Potential, by Sector

Areas	Total Potential Residential Land[5]	Land Not Approved For Development	Land For Which Planning Studies Are Underway[6]	Land in Areas With Approved Planning Studies[7]
NW	4,088[8]	-	1,043[9]	3,045
N	2,247	1,034[10]	-	1,213
NE	1,877	-	270[11]	1,607
E	278	-	-	278
SE	7,330	3,657[12]	-	3,673
S	515	-	-	515
SW	2,608	1,931[13]	-	677
W	1,123	-	-	1,123
TOTAL	20,066	6,622	1,313	12,131

---

[5] Excludes major environmentally sensitive areas, floodways, land requirements for future major parks, high school sites, freeways, expressways and major commercial developments. The estimates of vacant residential land are taken directly from the Short-Term Growth Management Strategy with adjustments for differences in area boundaries.

[6] It should not be assumed that lands referred to in this column are free of constraints. This will not be determined until each area structure plan is completed and approved by City Council.

[7] Not all of these lands have municipal services in place. Service related information is available from the Short-Term Growth Management Strategy.

[8] The boundaries of the Residential Land Survey and the Short-Term Growth Management Strategy are different. In the STGMS, MacEwan and Sandstone Valley have been included within the North Sector rather than the Northwest Sector as in this report.

[9] The estimated future acreage of residential lands in East and West Scenic Acres.

[10] The portion of Calgary North not covered by an area structure plan.

[11] Estimated future residential acreage for Fox Run.

[12] Estimated future residential acreage in the Homestead area (south of Highway 22X).

[13] Estimated future residential land in Midnapore III, including areas west of the alignment of the future Sarcee Trail.

ATTACHMENT 2

Estimated Population Potential on All Residential Lands within Calgary

i) On All Vacant Land With a Residential Potential

Areas	Total Potential Residential Land	Population Potential @ 16 PPA
NW	4,088	65,408
N	2,247	35,952
NE	1,877	30,032
E	278	4,448
SE	7,330	117,280
S	515	8,240
SW	2,608	41,728
W	1,123	17,968
TOTAL	20,066	321,056[14]

ii) On All Residential Land Including Sites Likely To Redevelop

On Unsubdivided Land All City Sectors	321,056
On Vacant, Subdivided Land (Excluding Central Area)	31,080
Additional Population Potential in the Downtown	15,000
Additional Population Potential in the Inner City & Inner Suburbs[15]	85,000
Total Population Potential On All Residential Lands	452,136

---

[14] Population estimates on vacant land within a residential use potential have been calculated at 16 persons per gross acre city-wide. If more localized density factors were used as in the Short-Term Growth Strategy, different population estimates would be generated.

[15] Includes Major Redevelopment Sites - LRT Corridors, Lincoln Park, Tom Campbell Hill and Fire Park.

ATTACHMENT 3

Calgary Residential Subdivision Plans Registered During 1988 by Areas and Community Districts (1988)

```
City Sector  CENTRAL                          Community   CFB/Currie
             ----------------                             ---------------
L.U.D.        R1     R2    RM1+2    RM3     RM4     RM5   Other      Total
No. Sites                                                 1                1
Net Acres
       Gr. Sub. Area (Ac)                 Mun. Res (Ac)          Sites
       Subdivided Sites       1           Env. Res (Ac)          Sites
--------------------------------------------------------------------------
City Sector  CENTRAL                          Community   Chinatown
             ----------------                             ---------------
L.U.D.        R1     R2    RM1+2    RM3     RM4     RM5   Other      Total
No. Sites                                                  13         13
Net Acres                                                   6.5        6.5
       Gr. Sub. Area (Ac)      6.7        Mun. Res (Ac)          Sites
       Subdivided Sites       13          Env. Res (Ac)          Sites
--------------------------------------------------------------------------
City Sector  CENTRAL                          Community   Downtown West
             ----------------                             ---------------
L.U.D.        R1     R2    RM1+2    RM3     RM4     RM5   Other      Total
No. Sites                                                   1          1
Net Acres
       Gr. Sub. Area (Ac)                 Mun. Res (Ac)          Sites
       Subdivided Sites       1           Env. Res (Ac)          Sites
--------------------------------------------------------------------------
City Sector  CENTRAL                          Community   Highland Park
             ----------------                             ---------------
L.U.D.        R1     R2    RM1+2    RM3     RM4     RM5   Other      Total
No. Sites             1                                                1
Net Acres
       Gr. Sub. Area (Ac)                 Mun. Res (Ac)          Sites
       Subdivided Sites       1           Env. Res (Ac)          Sites
--------------------------------------------------------------------------
City Sector  CENTRAL                          Community   Inglewood
             ----------------                             ---------------
L.U.D.        R1     R2    RM1+2    RM3     RM4     RM5   Other      Total
No. Sites             2                                                2
Net Acres
       Gr. Sub. Area (Ac)                 Mun. Res (Ac)          Sites
       Subdivided Sites       2           Env. Res (Ac)          Sites
--------------------------------------------------------------------------
```

ATTACHMENT 4

Residential Sites on Which Construction Started in 1988, by Areas and Community Districts (1988)

City Sector CENTRAL Community Altadore

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		1						1
Net Acres		0.1						0.1

City Sector CENTRAL Community Banff Trail

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		2						2
Net Acres		0.2						0.2

City Sector CENTRAL Community Bankview

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites				1				1
Net Acres				0.1				0.1

City Sector CENTRAL Community Bridgeland/Riverside

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		2						2
Net Acres		0.2						0.2

City Sector CENTRAL Community Cambrian Heights

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites	1							1
Net Acres	0.2							0.2

City Sector CENTRAL Community Capitol Hill

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		6						6
Net Acres		0.4						0.4

City Sector CENTRAL Community Crescent Heights

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		2						2
Net Acres		0.2						0.2

City Sector CENTRAL Community Elbow Park

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites	5							5
Net Acres	0.9							0.9

ATTACHMENT 5

Vacant Residential Sites Inventory by Areas and Community Districts, 1988 December 31

City Sector CENTRAL Community Altadore

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		9			9		1	19
Net Acres		0.9			1.3		0.1	2.2

City Sector CENTRAL Community Banff Trail

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites	1	5					4	10
Net Acres	0.1	0.5					0.8	1.4

City Sector CENTRAL Community Bankview

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		3	1	1		7		12
Net Acres		0.3	0.1	0.1		1.2		1.6

City Sector CENTRAL Community Bel-Aire

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites	2							2
Net Acres	0.7							0.7

City Sector CENTRAL Community Bridgeland/Riverside

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		2		7	3	6	4	22
Net Acres		0.1		1.0	3.1	0.6	0.5	5.3

City Sector CENTRAL Community Britannia

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites	2							2
Net Acres	1.7							1.7

City Sector CENTRAL Community Capitol Hill

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites		8					2	10
Net Acres		0.6					0.3	0.9

City Sector CENTRAL Community Chinatown

L.U.D.	R1	R2	RM1+2	RM3	RM4	RM5	Other	Total
No. Sites							14	14
Net Acres							3.0	3.0

Calgary also has an Industrial Land Survey which provides detailed information on individual vacant development sites (legal description, address, designation, size and ownership) as well as maps identifying the location of these sites. Future industrial subdivisions are also identified with information on location, proposed land use designation, lots to be created and projected year of opening.

Data Collection

Information on vacant, unsubdivided future residential land is obtained from the Short-Term Growth Management Strategy and Area Structure Plans. Individual pacels are not identified and no information on unit types or potential total units is provided. Population potential is estimated using a standard population density per acre.

Registered Plans are identified on a list from the Land Titles Office. This data is assembled at the community level; there are about 150 of these communities in Calgary.

Assessment Department database records and field surveys are used for other information on vacant land within Registered Plans, as well as for construction activity data.

Housing and building permit statistics are gathered from Canada Mortgage and Housing Corporation, the Calgary Civic Census, and the Planning and Building Department.

System Strengths

Calgary's system has the following strengths:

- Provides subdivision-specific data on vacant residential land (supply) and subdivision registration, building permit and construction activity (demand); and
- Assesses the total potential for future residential development in terms of land area and population at the city sector and city levels; includes infill, redevelopment and intensification potential, although on an aggregated basis only.

System Weaknesses

The system has the following disadvantages:

- Does not provide data on unit potential either in total or by dwelling type for land until it is registered; when land is registered, only provides land acreage and not unit potential data;
- Does not include information on land ownership and subdivision servicing; and
- Unit types are not compatible with CMHC classification.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: CITY OF EDMONTON	Name of System: Status of Residential Land; Residential Staging Information
Phone: (403) 428-3572	
Contact: Tim Ford, Planning & Development Dept.	Updating Frequency: Semi-Annual

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered Unbuilt	Draft Approved*	In Process**	Inactive	
– land area						
– unit potential	X	X	X	X		
– population potential						
– unit/dwelling type	X	X	X	X		■
– zoning						■
– lot sizes						■
– lot frontages						■
– owner name						
– ownership type						
– servicing status: sewer***						■
water***						■

* Raw land in approved Area Structure Plans.

** Raw land in authorized Area Structure Plans.

*** Provides general measures of number of lots which are serviced or unserviced.

DATA SOURCES			
		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records		Field Surveys	X
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)	X	Other:	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision X Neighbourhood/Community X

If parcel, min. parcel size:

Coverage: City/Municipality X Regional ___

SYSTEM STRENGTHS

- Easy access to data.
- Provides link between vacant residential land and the rate of residential land absorption.
- Provides relative timeframe for staging of residential development based on both planning and servicing status.

SYSTEM SET-UP

Hardware: Micro-computers

Software: DBase and Lotus 1-2-3

Mapping: Manual

Future:

SYSTEM WEAKNESSES

- No information on land area and ownership.

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	X
Other report(s):	

CITY OF EDMONTON, ALBERTA

General

The system covers vacant residential land at various stages of the planning process. Output from the system is contained in two reports:

- The Status of Residential Land; and
- Residential Staging Information.

Area Structure Plans (ASPs) and their component neighbourhoods are used as the geographic unit of data aggregation. At present, there are about 20 Area Structure Plans in Edmonton. Six tables of data are provided for each ASP by neighbourhood (Attachment 1). The tables show:

- Subdivision plan registration activity (potential dwelling units);
- Year-end supply of vacant subdivided residential land (potential dwelling units);
- Servicing activity on registered lands (potential dwelling units);
- Year-end supply of vacant serviced residential land (potential dwelling units);
- Building permits issued; and
- Total stock of dwelling units (cumulative total of building permits issued to date).

Once a building permit is issued for a lot, it is no longer considered vacant. Revisions to the "Status of Residential Land" report are made annually.

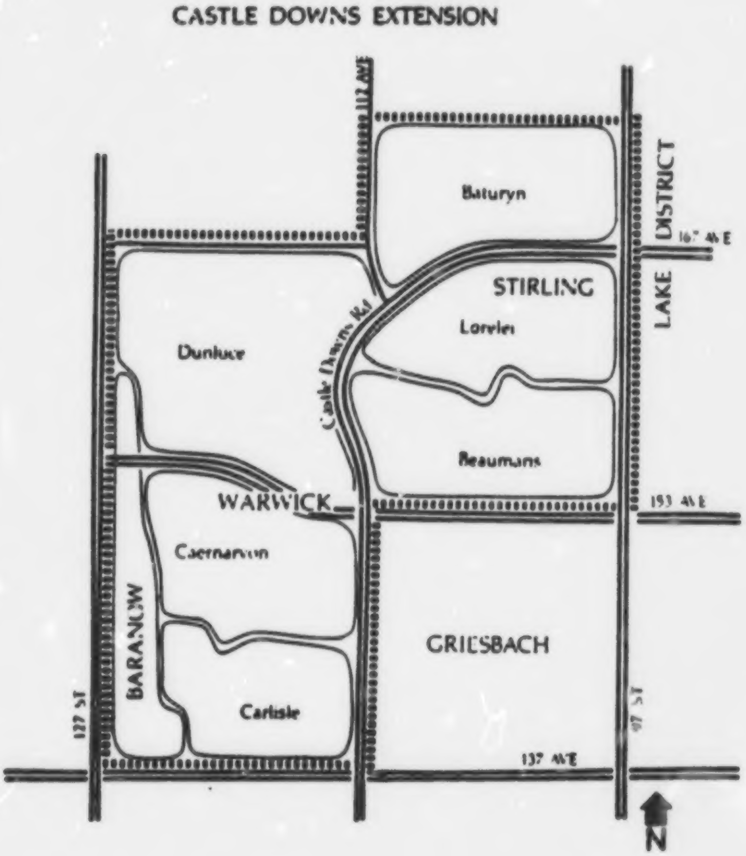
Only land within Edmonton city limits is included. The city accounted for only 60 percent of the housing starts in the Edmonton CMA in 1989.

The status report is supplemented by a semi-annual "Residential Staging Information" report which identifies and evaluates the supply of and demand for residential land in terms of potential dwelling units in Edmonton ASPs. The staging information reflects actual development activity and forecasts of demand and servicing. For each neighbourhood, the potential (number of) dwelling units (PDUs) are forecast by type under these categories (Attachment 2):

- Vacant, serviced, subdivided;
- Vacant, subdivided (not serviced);
- Raw land in approved ASPs;
- PDUs in authorized ASPs; and

ATTACHMENT 1A

CASTLE DOWNS


CASTLE DOWNS EXTENSION
112 AVE
Baturyn
LAKE DISTRICT
167 AVE
STIRLING
Lorelei
Dunluce
Castle Downs Rd
Beaumaris
WARWICK
153 AVE
Caernarvon
BARANOW
GRIESBACH
Carlisle
127 ST
97 ST
137 AVE
N

ATTACHMENT 1B

Annual Residential Subdivision Plan Registration Activity in Castle Downs
1987-1988 (Measured by Potential Dwelling Units)

Table 8-1

Castle Downs Neighbourhoods	1987 Single, Semi Duplex Units	1987 Row Units	1987 Apart. Units	1987 Total Units	1988 Single, Semi Duplex Units	1988 Row Units	1988 Apart. Units	1988 Total Units
Baturyn	-	-	-	-	8	-	-	8
Beaumaris	-	-	-	-	11	-	-	11
Caernarvon	8	-	-	8	-	-	-	-
Carlisle	8	-	-	8	-	-	-	-
Dunluce	-	-	-	-	-	-	-	-
Lorelei	6	-	-	6	14	-	-	14
Castle Downs Total	22	-	-	22	33	-	-	33

Year-End Supply of Vacant Subdivived Residential Land in Castle Downs
1987-1988 (Measured by Potential Dwelling Units)

Table 8-2

Castle Downs Neighbourhoods	1987 Single, Semi Duplex Units	1987 Row Units	1987 Apart. Units	1987 Total Units	1988 Single, Semi Duplex Units	1988 Row Units	1988 Apart. Units	1988 Total Units
Baturyn	3	92	-	95	7	92	-	99
Beaumaris	46	62	314	422	45	62	314	421
Caernarvon	21	-	-	21	15	-	-	15
Carlisle	10	-	-	10	13	-	-	13
Dunluce	13	3	-	16	15	3	-	18
Lorelei	20	29	-	49	17	15	-	33
Castle Downs Total	110	186	314	610	110	173	314	597

Annual Residential Land Servicing Activity in Castle Downs
1987-1988 (Measured by Potential Dwelling Units)

Table 8-3

Castle Downs Neighbourhoods	1987 Single, Semi Duplex Units	1987 Row Units	1987 Apart. Units	1987 Total Units	1988 Single, Semi Duplex Units	1988 Row Units	1988 Apart. Units	1988 Total Units
Baturyn					8	-	-	8
Beaumaris					11	-	-	11
Caernarvon	No				-	-	-	-
Carlisle	Activity				-	-	-	-
Dunluce					-	-	-	-
Lorelei					14	-	-	14
Castle Downs Total					33	-	-	33

ATTACHMENT 1C

Year-End Supply of Serviced Residential Land in Castle Downs 1987-1988 (Measured by Potential Dwelling Units)

Table 8-4

Castle Downs Neighbourhoods	1987				1988			
	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units
Baturyn	3	92	-	95	7	92	-	99
Beaumaris	46	62	314	422	45	62	314	421
Caernarvon	21	-	-	21	15	-	-	15
Carlisle	16	-	-	16	13	-	-	13
Dunluce	13	3	-	16	13	3	-	16
Lorelei	20	29	-	49	17	16	-	33
Castle Downs Total	119	186	314	619	110	173	314	597

Residential Dwelling Units Approved by Building Permits in Castle Downs 1987-1988 (Measured by Potential Dwelling Units)

Table 8-5

Castle Downs Neighbourhoods	1987				1988			
	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units
Baturyn	-	-	-	-	4	-	-	4
Beaumaris	58	6	-	64	15	-	-	15
Caernarvon	8	-	-	8	6	-	-	6
Carlisle	16	-	-	16	3	-	-	3
Dunluce	16	-	-	16	1	-	-	1
Lorelei	15	-	-	15	18	-	-	18
Castle Downs Total	113	6	-	119	47	-	-	47

Residential Dwelling Units Approved by Building Permits in Castle Downs to December 31, 1988

Table 8-6

Castle Downs Neighbourhoods	1987				1988			
	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units	Single,Semi Duplex Units	Row Units	Apart. Units	Total Units
Baturyn	1,288	372	-	1,660	1,292	372	-	1,664
Beaumaris	976	404	263	1,643	991	404	263	1,658
Caernarvon	857	390	185	1,432	863	390	185	1,438
Carlisle	819	505	137	1,461	822	505	137	1,464
Dunluce	1,323	469	841	2,633	1,324	469	841	2,634
Lorelei	877	390	185	1,452	895	390	185	1,470
Castle Downs Total	6,140	2,530	1,611	10,281	6,187	2,530	1,611	10,328

ATTACHMENT 2

Table 5
INVENTORY OF SUBDIVIDED AND SERVICED LOTS IN YEARS USING ACTUAL 1987 AND FORECASTED 1988 AND 1989-1991 ANNUAL ABSORPTION RATES

Sector	1987	1988	1989-1991
Northeast			
SS	3.5 yrs	2 yrs	1.6 yrs
GRM	20+	20+	20+
APT	20+	20+	20+
TOTAL	20+	20+	20+
North			
SS	1.1 yrs	2.3	1.3
GRM	19.3	9.8	9.7
APT	20+	2.1	20+
TOTAL	2.6	2.7	2.3
Southeast			
SS	2.7 yrs	1.5	1.5
GRM	20+	20+	20+
APT	20+	20+	20+
TOTAL	20+	13.4	13.7
Southwest			
SS	1.6 yrs	1.6	1.3
GRM	20+	20+	15.6
APT	20+	20+	20+
TOTAL	6.0	5.7	4.3
West			
SS	1.6 yrs	1.3	0.9
GRM	9.5	20+	10.5
APT	20+	20+	20+
TOTAL	7.0	5.6	3.9

Note: SS - Singles/Semis;
GRM - Ground Related Multiples;
APT - Apartments;

Sources: Actual Data - CMHC
Forecast Data - Forecasting and Policy Development Group, Planning and Development Department. Forecast Starts 1988-1992.

Table 8
POTENTIAL DWELLING UNITS NORTH SECTOR
(Forecasted For December 31, 1988)

CITY SECTOR	VACANT SERVICED SUBDIVIDED				VACANT SUBDIVIDED (Not Serviced)				RAW LAND IN APPROVED ASP'S				[illegible] ASP'S				TOTAL POTENTIAL UNITS			
NORTH	SS	GRM	APT	TOTAL	SS	GRM	APT	TOTAL	SS	GRM	APT	TOTAL	SS	GRM	APT	TOTAL	SS	GRM	APT	TOTAL
Lake District	317	84	0	401	0	0	0	0	7,234	[illegible]	1,465	[illegible]	0	0	0	0	7,551	2,773	1,465	[illegible]
Castle Downs	119	186	324	629	0	0	0	0	0	0	0	0	0	0	0	0	119	186	324	629
Castle Downs Ex	0	0	0	0	0	0	0	0	3,273	[illegible]	1,710	[illegible]	0	0	0	0	3,273	[illegible]	1,710	[illegible]
Palisades	40	0	0	40	0	0	0	0	5,337	2,315	2,363	[illegible]	0	0	0	0	5,377	2,315	2,363	10,055
1988 TOTAL*	[illegible]	270	324	[illegible]	0	0	0	0	[illegible]	[illegible]	7,470	[illegible]	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]
									Minus Servicing end 1988								Net Reduction in Lot Supply			
OTHER Starts to end 1988**	240	25	100	365					400	0	0	400					640	25	100	765
																	Net Addition to Lot Supply			
PLUS Servicing end 1988***	400	0	0	400													400	0	0	400
1988 TOTAL	[illegible]	245	[illegible]	[illegible]	0	0	0	0	[illegible]	[illegible]	7,470	[illegible]	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]

Sources: Forecasting and Policy Development Group,
Status of Residential Land Report,1987
Housing Market Report,1988
Socio-Economic Forecast Report 1988-1993
CMHC,Housing Starts 1987
*All 1987 Servicing and Subdivision Activity is Included
**1988 Building Starts and Servicing are Forecast Estimates
***1988 Servicing is Deducted from the Raw Land Inventory

- Total Potential Units

In summary, the "Residential Staging Information" report provides an inventory of subdivided and serviced lots in years (of supply) using actual and forecasted annual absorption rates. These estimates are given by unit type for each city sector.

Data Collection

The supply of vacant residential land by dwelling type in the various stages of approval are determined using subdivision maps and records, and general plan designations. Assessment records and land use maps are also used to determine whether land is vacant or occupied. Within registered and serviced subdivisions, building permit information is used to delete subdivision lots from the inventory. Additionally, aerial photos and field surveys are used for verification.

Demand is forecasted, measured by housing starts by dwelling type by year in each sector, by calculating five-year residential land absorption rates. Estimated future servicing activity is retrieved through discussions with the Land Development Section.

The inventory, measured in years, is calculated by dividing residential land supply by actual and forecasted housing demand (by dwelling type in each city sector).

System Strengths

Edmonton's system has these strengths:

- Planning Department has easy access to data;
- Makes a link between vacant residential land and the rate of residential land absorption; and
- Provides relative timeframe for staging of residential development based on both planning status and servicing availability at the neighbourhood level.

System Weaknesses

The system's only major weakness is that it does not include information on land area and ownership.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: CITY OF WINNIPEG	Name of System: Potential Dwelling Units in Approval Process
Phone: (204) 986-5161	
Contact: Irwin Torry, District Planning Co-ordinator	Updating Frequency: Quarterly

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
– land area		X	X	X		
– unit potential	X	X	X	X		
– population potential *						
– unit/dwelling type	X	X	X	X		■
– zoning						■
– lot sizes						■
– lot frontages						■
– owner name		X	X	X		
– ownership type						
– servicing status: sewer						■
water						■

* The Planning Department produces another report set that contains projections of population at the neighbourhood level, but does not distinguish between potential population associated with approved plans of subdivisio and land expected to be approved in the future.

DATA SOURCES			
		Assessment Records	
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records	X	Field Surveys	X
General Plan Designation		Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision X Neighbourhood/Community X

If parcel, min. parcel size:

Coverage: City/Municipality X Regional ___

SYSTEM SET-UP

Hardware: Microcomputers

Software: DBase

Mapping: Manual

Future:

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	X
Vacant land at various stages with maps	
Other report(s):	

SYSTEM STRENGTHS

- Provides considerable housing stock and existing land use information at the neighbourhood level.
- Uses building permit data to monitor the number of vacant lots remaining in each subdivision.

SYSTEM WEAKNESSES

- Does not include information on servicing status.
- Does not address infill potential.

CITY OF WINNIPEG, MANITOBA

General

The City monitors all existing land use (occupied land) at the neighbourhood level and vacant residential and industrial land at both the subdivision level and the neighbourhood level.

Only land within Winnipeg city limits is included. The City accounted for over 90 percent of dwelling starts in the Winnipeg CMA in both 1988 and 1989.

There are two reports which monitor the status of residential land in Winnipeg. They are:

- Lot Inventory/Potential Dwelling Units reports - this report set lists and summarizes the dwelling unit potential of land included in the approval process as well as the dwelling unit potential contained in approved plans of subdivision; and
- Area Characterization Reports - these reports show existing land uses and zoning in built-up areas; while vacant land is identified on maps in these reports, no overall numbers of potential units are provided.

In the "Lot Inventory/Potential Dwelling Units" reports, vacant residential land is monitored in each of the following three planning stages (Attachment 1):

- Prior to Council Approval;
- Approved in Principle; and
- Applications given Third Reading (final approval).

For any subdivision plan in the first two stages, area in acres, potential dwelling units by dwelling type, developer name, location and application number are reported. Subdivision information is reported at the community level.

For a subdivision in the third stage, the same information is reported and two sets of unit potentials by dwelling type are given instead of one. The first provides the unit potentials by dwelling type as originally approved by council, and the second provides the unit potentials by dwelling type which remain unbuilt.

The City also monitors vacant industrial land at the community level. Land characteristics include location, site size, zoning and water and sewer servicing for vacant property and business name, address, zoning, site size and type of business for existing businesses.

ATTACHMENT 1

THE CITY OF WINNIPEG
DEPARTMENT OF EVIRONMENTAL PLANNING
RESEARCH BRANCH

POTENTIAL DWELLING UNITS IN APPROVAL PROCESS PRIOR TO COUNCIL APPROVAL

ST BONIFACE / ST VITAL

DEVELOPER	LOCATION	APPLICATION NUMBER	TOTAL ACRES	POTENTIAL DWELLING UNITS SINGLE	SEMI	ROW	APT	TOTAL	COMMENTS
E [illegible]	771 ST JOSEPH STREET NORTH AND 773 RUE AUBERT S.01 North St. Boniface	DAZ 226/90	0.30	0	0	0	15	15	
CORPORATION DE DEVELOPMENT DE SAINT BONIFACE	[illegible] & SOUTH SIDES [illegible] [illegible] & [illegible] S.02 Central St. Boniface	DASC 1/90	22.06	30	0	180	315	525	
J. [illegible]	SOUTH SIDE OF RUE [illegible]	DAZ 231/90	0.50	0	0	0	0	0	NO DU'S YET LISTED IN APP

POTENTIAL DWELLING UNITS IN APPROVAL PROCESS APPROVED IN PRINCIPLE

ST BONIFACE / ST VITAL

DEVELOPER	LOCATION	APPLICATION NUMBER	TOTAL ACRES	POTENTIAL DWELLING UNITS SINGLE	SEMI	ROW	APT	TOTAL	COMMENTS
JONES & [illegible] ARCHITECTS	SE COR OF TACHE AV AND RUE AUBERT S.01 North St. Boniface	DAZ 281/86	0.50	0	0	20	0	20	ACREAGE IS APPROXIMATE
RICHARD [illegible] LTD	1073-1079 ST MARYS ROAD S.29 River Park South	DAZ 279/90	4.00	0	0	6	108	115	3 APTS WITH 36 [illegible] EACH, 1 TOWNHOUSE
QUALICO DEVELOPMENTS LTD.	BOUNDED BY JOHN FORSYTH, ST. ANNES, PERIMETER & [illegible] S.32 South St. Vital	DASZ 31/84	300.00	980	0	0	157	1,137	ACREAGE IS APPROXIMATE PD=30 ACRES

INVENTORY OF POTENTIAL DWELLING UNITS APPLICATIONS GIVEN THIRD READING

ST BONIFACE / ST VITAL

DEVELOPER	LOCATION	APPLICATION NUMBER	TOTAL ACRES	ORIGINALLY APPROVED BY COUNCIL SINGLE	SEMI	ROW	APT	TOTAL	REMAINING IN INVENTORY SINGLE	SEMI	ROW	APT	TOTAL	COMMENTS
COMMISSIONER OF THE ENVIRONMENT	AREA BTW. TACHE AV, RUE [illegible], RUE ST.JOSEPH, RUE [illegible] S.01 North St Boniface	DAZ 229/83	5.06	4	24	0	0	28	2	24	0	0	26	ACREAGE IS APPROXIMATE
NOUVELLE ECONOMIE URBAINE FRANCOPHONE INCORP	NORTH OF RUE AUBERT, EAST OF RUE ST. JOSEPH S.01 North St. Boniface	DASZ 25/86	7.94	90	0	0	0	90	56	0	0	0	56	ACREAGE IS APPROXIMATE
TYRONE ENTERPRISES LTD.	N. SIDE RUE [illegible], E. OF TACHE AV S.01 North St. Boniface	DAZ 231/86	0.11	0	0	0	4	4	0	0	0	4	4	
[illegible], [illegible] &	EAST OF TACHE AV, NORTH OF RUE	DAZ 286/86	1.50	0	0	0	70	70	0	0	0	70	70	

Data Collection

The inventory's unit potential by unit type, area and owner information on subdivision plans at the various stages of the planning process is collected from subdivision maps and records. Building permits are monitored to update the number of lots built or vacant per subdivision. This data is aggregated at the neighbourhood and community level.

Aerial photos are used for detecting vacant land in downtown and built-up areas. Zoning and rezoning records are used to add vacant land that is rezoned for residential use to the inventory.

System Strengths

The Winnipeg system's major strengths are as follows:

- Provides considerable housing stock and existing land use information at the neighbourhood level; and
- Uses building permit data to monitor number of vacant lots remaining in each subdivision.

System Weaknesses

While there are no obvious weaknesses in the system, it does not include the following:

- Some information on new subdivisions that would be useful such as maps, servicing status and lot sizes; and
- The potential for infill.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: WATERLOO REGION	Name of System: Land Utilization Study
Phone: (519) 885-9702	
Contact: Larry Masseo, Dept. of Planning & Development	Updating Frequency: Annual

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered Unbuilt*	Draft Approved*	In Process**	Inactive**	
– land area		X		X		
– unit potential		X		X		
– population potential		X		X		
– unit/dwelling type						▨
– zoning						▨
– lot sizes						▨
– lot frontages						▨
– owner name						
– ownership type						
– servicing status: sewer***						▨
water***						▨

* Referred to as committed lands.

** Referred to as uncommitted lands.

*** General servicing information provided in separate Sewer and Water Annual Monitoring Report.

DATA SOURCES			
		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records		Field Surveys	X
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)	X	Other:	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel X Subdivision ___ Neighbourhood/Community X

If parcel, min. parcel size:

Coverage: City/Municipality ___ Regional X

SYSTEM SET-UP

Hardware: Microcomputers

Software: Lotus 1-2-3

Mapping: Manual

Future:

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	X
Other report(s):	

SYSTEM STRENGTHS

- Covers all land use categories, as well as both vacant land and existing land use.
- Provides regional analysis of availability of servicing annually (in another report).

SYSTEM WEAKNESSES

- Limited amount of information provided per parcel.
- No information on dwelling types or land ownership; no planning approval stage information for urban areas.
- Information on planning approval stages for townships is aggregated into "committed" or "uncommitted" categories; cannot differentiate between Registered, Draft Approved, In Process or Inactive lands.

REGIONAL MUNICIPALITY OF WATERLOO

General

The Regional Municipality of Waterloo monitors all land within Regional boundaries, including both existing land use and vacant parcels. Five land use classifications are used:

- Living (Residential)
- Working (Industrial)
- Commercial
- Special Attractor (Institutional, Recreational, Cultural)
- Other

The Region comprises three cities, Kitchener, Waterloo and Cambridge, as well as four townships. The Kitchener CMA, on the other hand, includes the three cities and only two of the townships.

The "Annual Settlement Land Utilization Report" presents the development potential for designated settlements within the region. Only relatively limited information on acreage and total unit and population potential on vacant residential land are provided by the Region's monitoring system.

Land parcels in the four townships are analyzed using three standard tables:

- Existing Land Use (Attachment 1) - for residential land, provides area and number of units for both existing and undeveloped lands in each settlement area; for industrial, commercial and special attractor categories, area data is provided for both existing and undeveloped lands in each settlement area; for other land uses, area is given for undevelopable, restricted and rural/undesignated land use categories.

- Residential Units and Ultimate Capacity (Attachment 1) - for existing residential land use, provides land area, number of units, population and population per unit; for undeveloped land, provides land area, and number of units (separated between committed and uncommitted lands) as well as the estimated population for each settlement area.

- Industrial/Commercial Areas - for each location in a township, total area, developed area and undeveloped area are provided.

Similar tables but with slightly less information are provided for the three urban areas. Due to the settlement policies in the Regional Official Policies Plan, the land monitoring process is much more detailed at the Township level than at the urban level.

ATTACHMENT 1

TOWNSHIP OF NORTH DUMFRIES
LAND UTILIZATION STUDY
1988 (Hectares)

EXISTING LAND USAGE

[illegible]

RESIDENTIAL UNITS AND ULTIMATE CAPACITY

[illegible]

[illegible]

Data Collection

Existing land use information is based on air photo interpretation and complemented by a review of Official Plan Amendments, building permits and site visits.

Plan of subdivision maps and records are used for acquiring information on lands in the development approval process. Building permit information is used to identify built land and thereby reduce the vacant land area within each subdivision parcel.

Ministry of Revenue Assessment maps are consulted for parcel lotting information. Assessment data is used to determine dwelling type densities and parcel areas where no plan of subdivision exists.

The future expected land use for parcels is determined by zoning by-laws and Official Plan designations. Municipal planning officials are also consulted throughout this process to verify information.

System Strengths

The advantages of the Waterloo Region's system are:

- It covers all land use categories, as well as both vacant land and existing land use; and
- It provides a regional analysis of the availability of servicing in another report.

System Weaknesses

The weaknesses of the land monitoring system used include:

- Limited amount of information provided by system; no data is provided on the staging of undeveloped land using the registered, draft approved, in process, and inactive categories, or on dwelling types, or ownership; and
- Parcel level data, while gathered, is not presented in the reports (except for land use type and parcel area in the townships); instead the data is aggregated to the settlement area for the townships and to the traffic zone level for the cities.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: OTTAWA-CARLETON	Name of System: Vacant Urban Residential Land Survey
Phone: (613) 560-2053	
Contact: Joseph Phalen, Planning Dept.	Updating Frequency: Annual

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered Unbuilt	Draft Approved	In Process	Inactive	
- land area		X	X	X	X	
- unit potential		X	X	X	X	
- population potential						
- unit/dwelling type		X	X	X	X	■
- zoning		X	X	X	X	■
- lot sizes		X*	X*	X*		■
- lot frontages						■
- owner name		X	X	X	X	
- ownership type		X	X	X	X	
- servicing status: sewer						■
water						■

* An estimated average lot size is provided where possible.

DATA SOURCES		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records	X	Field Surveys	X
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)	X	Other: CMHC starts and completions; site plans	
Land Use Maps			

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel X Subdivision ____ Neighbourhood/Community ____

If parcel, min. parcel size: 0.8 hectares (generally)

Coverage: City/Municipality ____ Regional X

SYSTEM SET-UP

Hardware: Microcomputers

Software: DBase III+

Mapping: Manual

Future: GIS (Geovision)

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	X
Other report(s):	

SYSTEM STRENGTHS

- Extensive amount of data per parcel.
- Links data from variety of sources.
- Addresses rezoning and infill land (does not capture all infill though).
- Regional overview of land consumption trends.
- Covers all planning stages and inactive land.

SYSTEM WEAKNESSES

- Extensive work involved in database maintenance.
- Miss a lot of infill land.
- Miss some lots processed between survey dates.

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

General

Ottawa-Carleton's Planning Department monitors all vacant residential land parcels greater than 0.8 hectares in size as well as many smaller parcels within the major urbanized portion of the Region of Ottawa-Carleton. This includes all land within the National Capital Commission's Greenbelt, plus land in four urban centres outside the Greenbelt - namely, Barrhaven, Kanata, Orleans and Stittsville.

The annual report entitled "Vacant Urban Residential Land Survey" provides a comprehensive analysis of the supply of urban residential land. Summary tables present the supply of land at various stages of the development process as well as ownership shares of this land (Attachments 1 and 2).

In addition, extensive details on the vacant residential land supply inventory in each census tract with vacant residential land are presented along with a map (Attachment 3).

Summary data on the land supply, unit potentials, and densities also provided at both the regional and municipal level.

Data Collection

Using the previous year's report as a base, the information on vacant residential land is updated using recent aerial photos, field surveys, land approval information (subdivision/condominium applications) and new zoning and Official Plan designation information. Current or very recent aerial photographs (where available) and field surveys are used to detect and verify new residential construction activity.

Regional and Local Official Plan Amendments are reviewed to identify new parcels of vacant residential land. Zoning changes and site plans (where available) are monitored in an attempt to capture residential parcels smaller than 0.8 hectares. Zoning information is also used to estimate unit potentials for land which has no plan of subdivision (inactive land).

Individual land parcels are based on ownership. These parcels are then further subdivided based on variations in planning status and proposed development density within the parcel.

System Strengths

The Ottawa-Carleton system has the following strengths:

- Extensive amount of data per parcel compared to other Canadian systems;

ATTACHMENT 1

TABLE 9 URBAN RESIDENTIAL LAND SUPPLY AND UNIT POTENTIAL BY DEVELOPMENT STATUS AND MUNICIPAL SECTOR, DEC. 1988

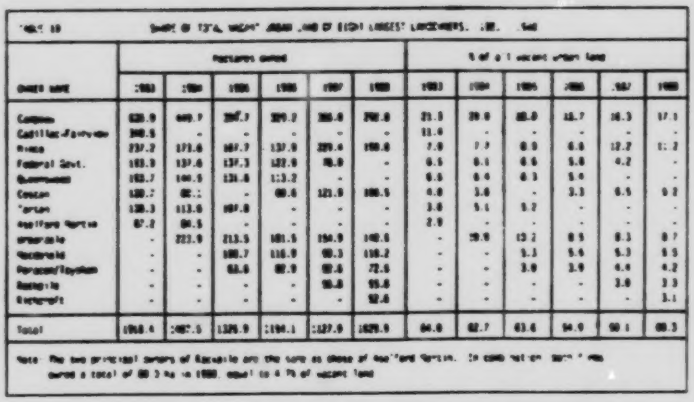
MUNICIPALITY	DEVELOPMENT STATUS									
	REGISTERED		DRAFT APPROVED		PENDING		NO PLAN		TOTAL	
	LAND SUPPLY ha*	UNIT POTENTIAL units	LAND SUPPLY ha*	UNIT POTENTIAL units	LAND SUPPLY ha*	UNIT POTENTIAL units	LAND SUPPLY ha*	UNIT POTENTIAL units	LAND SUPPLY ha*	UNIT POTENTIAL units
INSIDE GREENBELT										
OTTAWA	44.1	3,451	47.3	1,817	36.2	1,786	66.7	4,818	194.3	11,872
VANIER	0.0	0	0.0	0	3.9	782	0.0	0	3.9	782
ROCKCLIFFE	0.7	3	0.0	0	3.1	18	0.0	0	3.8	21
GLOUCESTER	6.5	137	19.2	1,653	11.5	637	20.5	736	57.7	3,163
NEPEAN	34.8	2,213	32.6	1,277	2.7	110	6.8	345	76.9	3,945
SUB-TOTAL	86.1	5,804	99.1	4,747	57.4	3,333	94.0	5,899	336.6	19,783
URBAN COMMUNITIES										
KANATA	65.4	1,529	226.9	5,314	240.8	7,481	250.5	9,181	783.6	23,505
BARRHAVEN	28.6	864	3.5	61	0.0	0	0.6	7	32.7	932
ORLEANS	112.7	3674.0	145.6	3670.0	52.0	1159.0	77.1	2022.0	387.4	10,525
(GLOUCESTER PART)	41.5	1,368	54.5	1,399	44.9	1,050	30.9	748	171.8	4,565
(CUMBERLAND PART)	71.2	2,306	91.1	2,271	7.1	109	46.2	1,274	215.6	5,960
SUB-TOTAL	206.7	6,067	376.0	9,045	292.8	8,640	328.2	11,210	1,203.7	34,962
STITTSVILLE	65.5	376	15.0	242	46.9	677	41.3	758	168.7	2,056
TOTAL	358.3	12,847	490.1	14,332	397.1	12,545	463.5	[illegible]	[illegible]	[illegible]

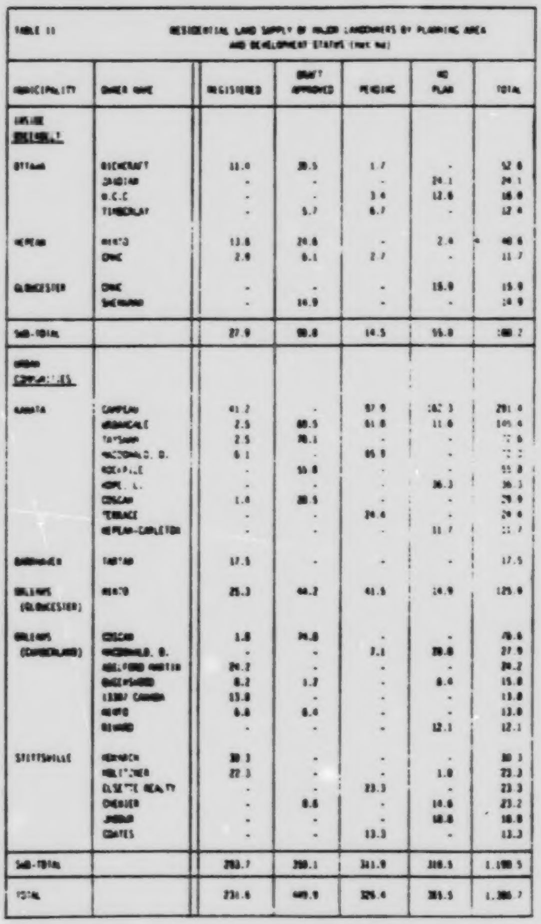
* net hectares

TABLE 13 SUPPLY OF REGISTERED AND DRAFT APPROVED LANDS IN DEC. 1988 BY UNIT TYPE

Unit Type	Registered and Draft Approved Land (net ha)	Average 5-Year Consumption 1984-88 (net ha)	Demand Years of Supply
Singles	305.0	142.4	2.1
Semis	3.8	2.7	1.4
Multiples	97.6	41.0	2.4
Apartments	61.5	10.4	5.9
Mixed	380.5	-	-
Total	848.4	196.6	4.3

ATTACHMENT 2

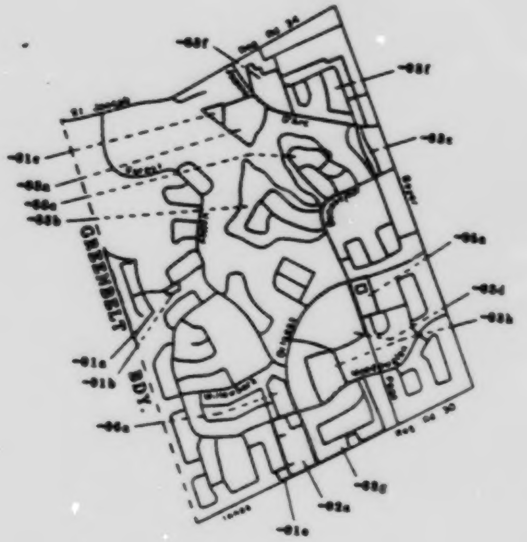




Note: Table 11 does not represent the entire holdings of each developer listed, as only land holdings over 10 hectares in each area are listed. Developers' smaller holdings in other areas are not listed, and therefore the table should not be interpreted to represent the total land inventory of each owner.

ATTACHMENT 3

CENSUS TRACT 125.04



LEGEND

VACANT RESIDENTIAL	▨
PARCEL NUMBER	-02A

Metres 1000 500 0

PARCEL CODE	PARCEL SIZE (HA)	UNIT POTENTIAL	UNIT TYPE	DENSITY CLASS	ESTIMATED AVERAGE LOT SIZE (M²)	OWNER	OWNERSHIP TYPE	PLAN NUMBER	GROWTH DESIGNATION	DEVELOPMENT STATUS
CENSUS TRACT 125.04										
[illegible]	4.6	40	SF	L	[illegible]	[illegible]				
[illegible]	0.2	3	SF	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	1.0	[illegible]	AP	H		[illegible]	PR	[illegible]	L	[illegible]
[illegible]	0.3	4	SF	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	1.5	[illegible]	SF	L	[illegible]	[illegible]	PR	[illegible]	L	[illegible]
[illegible]	8.5	[illegible]	AP	H		[illegible]	PR		L	[illegible]
[illegible]	7.7	[illegible]	SF	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	7.4	[illegible]	SF	L	[illegible]	[illegible]	PR	[illegible]	L	[illegible]
[illegible]	8.1	[illegible]	SF	L	[illegible]	[illegible]	PR	[illegible]	L	[illegible]
[illegible]	7.3	[illegible]	SF	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	9.9	[illegible]	SF	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	3.3	[illegible]	[illegible]	M	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	1.2	[illegible]	[illegible]	L	[illegible]	[illegible]	PR		L	[illegible]
[illegible]	1.9	27	SF	L	[illegible]	[illegible]	PR	[illegible]	L	[illegible]
SUBTOTAL	[illegible]	[illegible]					PR		L	[illegible]

Ledgend

UNIT TYPE

Single Family	SF
Semi-detached	SD
Multiples	MS
Apartments	AP
Mixed	MX

GROWTH DESIGNATION

Regional Official Plan (Urban)	U
Draft Local Plan	D
Approved Local Plan	L

DEVELOPMENT STATUS

No proposal	NP
Application Submitted	PC
Draft Approval	DA
Final Approval	RC

- System provides high quality parcel-level information; net residential land areas are determined per subdivision plan (exclude area taken by roadways and other land uses);

- Links data from a variety of sources (information from subdivision plans, Regional Official plan, zoning bylaws, and assessment roll);

- Includes land that has been rezoned to residential use, provided it is presently vacant, as well an attempt to monitor infill land through rezonings and site plans;

- Provides data on land consumption trends on regional level;

- Covers potential residential land at all planning stages, including pending and inactive stages; and

- Determines supply characteristics to meet Region's Official Plan requirements.

System Weaknesses

The system's disadvantages are:

- Extensive work involved in upkeep of database;

- The availability of piped services are very briefly mentioned in terms of the number of years of serviced land supply at the regional level as opposed to the parcel level; the parcel-level servicing definitions used in earlier reports are being adjusted in 1990 for inclusion in next survey;

- Infill land that is properly zoned and developed through building permit only is not always captured by monitoring system (only when the planning department is aware of specific lots); and

- System does not capture lots processed between survey dates.

COMPLEX GEOGRAPHIC INFORMATION SYSTEMS

These systems are capable of including all vacant land that has been designated for residential use. They can provide a very comprehensive up-to-date picture of the supply of vacant residential land provided that all of the databases used in the system are complete and current. A GIS can pick-up very small infill parcels as well as identify parcels with redevelopment and intensification potential, provided the systems are linked to databases with the relevant planning and current assessment information.

While the initial cost of setting up such a system is relatively high, costs can be significantly reduced if efforts are cordinated with other parties who are pursuing GIS options in the municipality, county or region. Oxford County's relatively low population base meant there were fewer parcels of land to work with. It's costs were greatly reduced through co-operation with both the provincial and federal governments.

Geographic Information Systems provide the means to link an infinite number of land-related databases using geocoding. Since these systems are, in many cases, still in states of evalution, they do not all monitor land at present. The systems examined, while they do not currently monitor vacant residential land, are presently developing land monitoring modules.

The Oxford County system will be capable of providing information on the availability of vacant residential land for development at various time periods. This will be done using a combination of planning and servicing status data for parcels along with a number of other data sources. Clearly, one has to initially define what criteria must be met for parcels of land to be included in the various time periods - for example, one year land might include all land in registered plans of subdivision that is fully serviced.

San Diego's Regional Urban Information System (RUIS) will report on the quantity and location of new development being proposed for both developed and undeveloped areas of the City. It will also report on the adequacy of public facilities that will serve the proposed developments.

Following is a review of these two advnaced GIS's and their capabilities for land monitoring. Although there are varying levels of complexities of GIS's being implemented in many municipalities in Canada and the United States, Oxford County and San Diego were chosen as representative of systems with advanced land monitoring capabilities.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: OXFORD CO., ONTARIO
Phone: (519) 539-1271
Contact: Kevin Antonides, Planning Dept.

Planned System: Land-Related Information System (LRIS), Planning Tracking Subsystem
Updating Frequency: Weekly to Annually

Characteristics include: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
- land area	X	X	X	X	X	X
- unit potential		X	X	X		
- population potential	X	X	X	X	X	
- unit/dwelling type	X	X	X	X	X	■
- zoning	X	X	X	X	X	■
- lot sizes	X	X	X	X		■
- lot frontages	X	X	X	X		■
- owner name	X	X	X	X	X	X
- ownership type	X	X	X	X	X	X
- servicing status: sewer	X	X	X	X	X	■
water	X	X	X	X	X	■

DATA SOURCES		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records	X	Aerial Photos	X
Rezoning Records	X	Field Surveys	X
General Plan Designation	X	Land Titles Info.	X
Public Works (Servicing)	X	Other: Census data	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	X
Public Works Dept.	X
Land Registry	X
Assessors	X
Other:	X

SYSTEM SCOPE

Information Base: Parcel X Subdivision ____ Neighbourhood/Community ____
If parcel, min. parcel size: No
Coverage: City/Municipality ____ Regional X

SYSTEM SET-UP

Hardware: PRIME 2655, PCs, Sun Unix Workstation
Software: ARCINFO, Oracle, RDBM
Mapping: GIS, ARCINFO
Future: Many new applications

TYPES OF OUTPUT	
Subdivision status report	X
Subdivision status report with maps	X
Vacant land at various stages	X
Vacant land at various stages with maps	X
Other report(s): Assessment-based	

SYSTEM STRENGTHS

- Amount of data per parcel will be vast.
- Will be able to address infill, redevelopment and intensification potential.
- Will be able to graphically identify net inactive residential land.
- Planning and servicing status will be identifiable once all subsystems are in place.
- Will be updated by daily processing of approvals and permits.

SYSTEM WEAKNESSES

- Extensive work involved in initial set-up of system.

OXFORD COUNTY, ONTARIO

General

The County of Oxford Land-Related Information System (LRIS) monitors all properties in Oxford County as defined by the Ontario Ministry of Consumer and Commercial Relations' computerized mapping POLARIS database. The monitoring of vacant residential land application is being developed in 1990. The County's 1988 population of 84,000 is fairly evenly split between urban and rural residents, with over 26,000 residents in the City of Woodstock. There are seven other municipalities in the county.

This GIS integrates information from a number of government databases, and makes useful and relevant information that otherwise would be largely inaccessible and inapplicable. The system accesses data through menu-driven, task-oriented subsystems that allow users of varying degrees of computer expertise to display, retrieve, update, and add information according to specific functions.

Oxford County's LRIS is a digital parcel-based information system which:

- updates property ownership;
- associates various data graphically or visually; and
- establishes new relations efficiently among existing municipal data using topological overlay techniques.

Examples of applications are show in Attachment 1 in the form of maps.

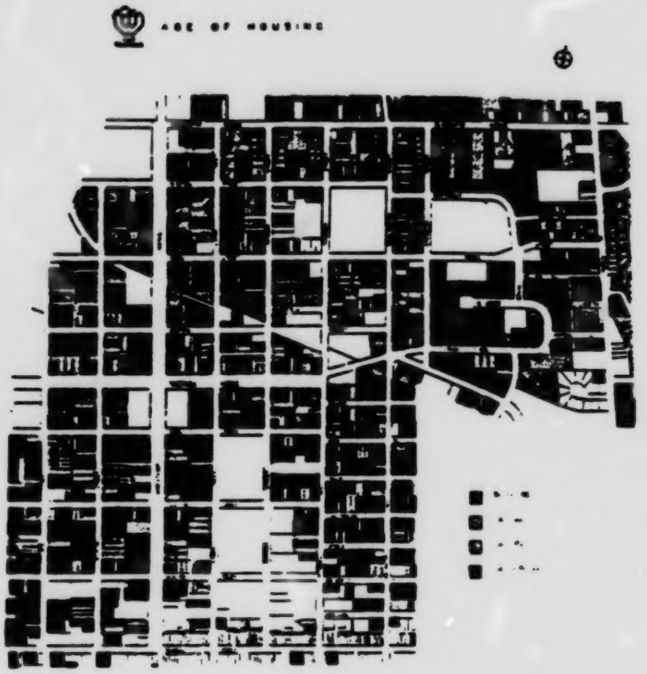
Oxford County's LRIS will soon be supplemented as follows:

- implementation of a planning tracking subsystem which would include data on zoning, severances and variances, subdivisions, condominium applications, part lot control and the County's Official Plan;
- implementation of a building permit and inspection system; and
- addition of a module that will involve mapping the location of underground utilities (useful for determining servicing status) and facility management.

The summary chart provided illustrates the characteristics of land that the planning tracking module will include. Noted additions include lot sizes and frontages as well as servicing data (although on a Yes/No level only). Eventually sewer capacity information will be integrated. Once a plan is registered, each lot will get a new entry and a parcel identification number. This number will be used to link the parcel with the various databases in LRIS.

A vacant land inventory is presently underway for Woodstock and should be complete by May 1990. This will serve as a base for building a county-wide system. The building permits module is being planned to track lots from building permit issuance to building occupancy.

ATTACHMENT 1


AGE OF HOUSING

RESIDENTIAL INFILLING POTENTIAL

COUNTY OF OXFORD

Data Collection

Oxford County's LRIS accesses and links data from six unique government databases through a Geographic Information System. These six databases are:

- The computerized mapping POLARIS database where each land parcel in the County was mapped from original deeds and surveys using co-ordinate geometry onto an INTERGRAPH system; Ministry of Consumer and Commercial Relations provided additional graphic property information;
- Ministry of Consumer and Commercial Relations' Land Registry Office provides on-line transactions of all title documents through its tabular POLARIS database;
- Ministry of Natural Resources' Ontario Basic Mapping (OBM) Project provides the digital topographic database and built environment with land features; 1:10,000 scale aerial photos were used to produce this map base;
- Statistics Canada's Area Master File (AMF) database gives access to census information for the County's population and provides a street network with address matching;
- Ministry of Revenue's Master Assessment System database provides assessment and population information for all properties and structures in each municipality; and
- The County and municipalities provided 354 each of base maps, land use maps and zoning maps; land use data was linked to the OBM and Assessment System databases while zoning data was linked to the POLARIS parcel data.

System Strengths

Oxford County's LRIS has the following strengths:

- Makes each data source readily accessible and maximally usable and relevant to different government bodies; permits rapid and visual geographic correlation of the physical properties, legal status, resources, and uses of Ontario's land;
- Shared access between County, eight local municipalities, several boards and commissions; and
- Links six land-related government databases.

The module being developed to track planning and development activity will have the following strengths:

- Amount of data per parcel will be vast;
- Since LRIS includes all land parcels in Oxford County, planning module will be capable of addressing infill, redevelopment and intensification potential within each municipality;
- Module will be able to identify net inactive residential land by overlaying OBM land use map with floodplain mapping and other digitized planning maps;
- Planning and servicing status will be available at the parcel level; therefore a timeframe for the staging of residential development could be more easily provided; and
- Module will be continuously updated by daily municipal transactions (processing of planning approvals and building permits) as changes occur.

System Weaknesses

During system implementation, the major problem was matching POLARIS parcel identification numbers (property and ownership information) with Assessment Roll numbers (building and population information). A complex cross-referencing file had to be used. Discussions with the Ontario Ministry of Revenue, which will supply graphics of assessed parcels, should eliminate this complexity.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: SAN DIEGO, CALIFORNIA	Planned System: Regional Urban Information System (RUIS), Land Development Module
Phone: (619) 696-3762	
Contact: Lisa Sparks, Project Leader	Updating Frequency: Continuous

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued*	Registered No Permit*	Draft Approved	In Process	Inactive	
– land area	X	X	X	X	X	X
– unit potential	X	X	X	X	X	
– population potential	X	X	X	X	X	
– unit/dwelling type	X	X	X	X	X	▨
– zoning	X	X	X	X	X	▨
– lot sizes						▨
– lot frontages						▨
– owner name	X	X	X	X	X	X
– ownership type						
– servicing status: sewer**						▨
water**						▨

NOTE:
Planning approval process varies from that show, however, equivalent status categories can be derived.

* Building Permit information from the BPIS (see text) Module of RUIS.

** Will be available once sewer and water infrastructure management modules are in operation.

DATA SOURCES			
Subdivision Maps/Records	X	Assessment Records	X
Zoning Maps/Records	X	Building Permit Info.	X
Rezoning Records	X	Aerial Photos	
General Plan Designation		Field Surveys	
Public Works (Servicing)	X	Land Titles Info.	
Land Use Maps		Other: Business Licensing Information	

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	X
Other:	

SYSTEM SCOPE
Information Base: Parcel X Subdivision ___ Neighbourhood/Community ___
If parcel, min. parcel size: No
Coverage: City/Municipality ___ Regional X

SYSTEM SET-UP
Hardware: IBM Mainframe
Software: In-house COBAL
Mapping: GIS
Future: More GIS modules to a total of 24

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	X

SYSTEM STRENGTHS

- Amount of data per parcel will be extensive.
- Comprehensive in spatial scope.
- Will streamline process of analyzing development issues.
- Cost-effective since expenses split between jurisdictions.

SYSTEM WEAKNESSES

- Will take 10 years to fully implement the entire system.

CITY OF SAN DIEGO & SAN DIEGO COUNTY, CALIFORNIA

General

San Diego's Regional Urban Information System (RUIS), in operation since 1984, is a computerized geographic information and mapping system. It will eventually combine land-related information for San Diego County's 18 cities and 14 County departments into a single database for access by City and County departments, other agencies and the public. All land parcels in San Diego County will eventually be monitored. The system will cover an area of approximately 4250 square miles. At present, it only includes information for the City of San Diego and data at the County level. It is a shared geographic database which allows City and County departments to create, update and maintain one set of maps and land data.

The maintenance modules (base maps) were developed initially, and now various applications are being developed. The central data base, when the system is complete, will be composed of 24 different modules (applications). This is illustrated in Attachment 1. Some modules that are particularly relevant to land monitoring include:

- Building Permit and Inspection System (BPIS)
- Land Development Module
- Development Monitoring System (DMS)
- Land Use Inventory

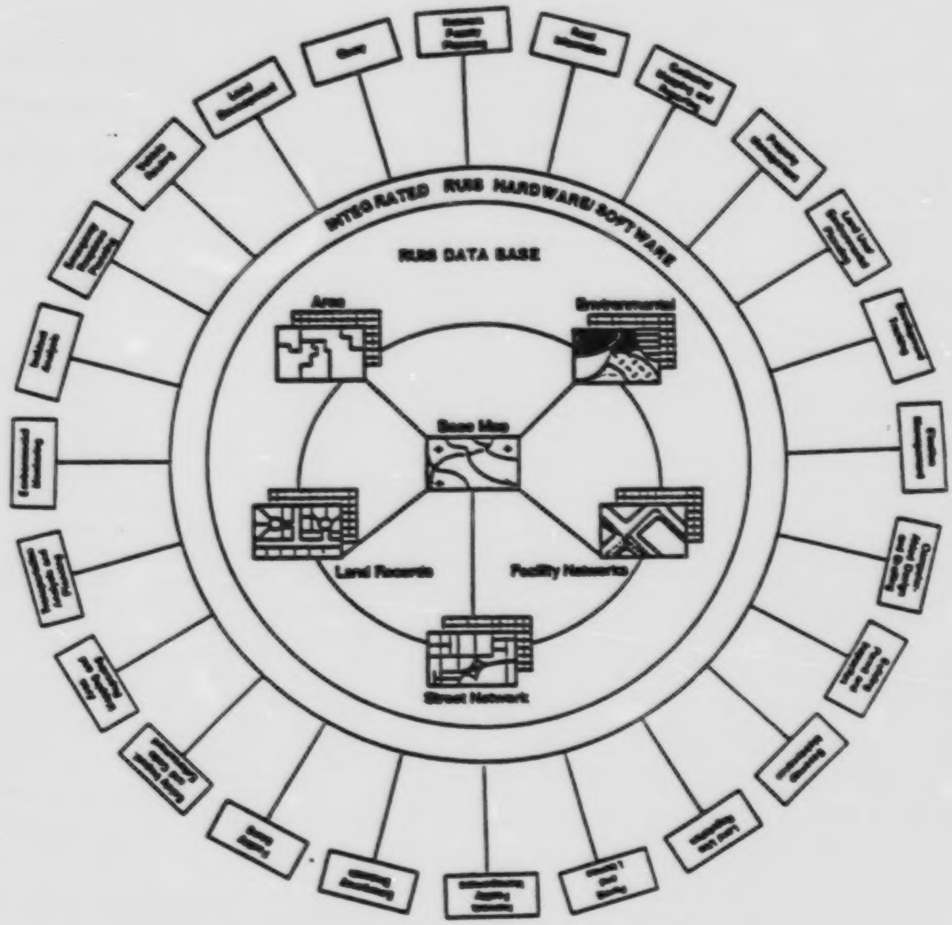
San Diego's BPIS, in operation since January 1987, is an automated permit process which reports on the quantity and location of new development being proposed for both developed and undeveloped areas of the city, as well as the adequacy of public facilities that will serve the proposed development. It indicates where development is taking place, approximately when it will be completed and who is doing it. BPIS is used to anticipate change several years before construction actually begins.

The Land Development Module, to become operational in 1990, is an automated subdivision approval system. Tentative and final subdivision maps are digitized and tracked through the development approval process. Both this module and BPIS need to be operational before the development monitoring system can be completed. The summary chart illustrates what this module will be able to monitor when all RUIS modules are operational.

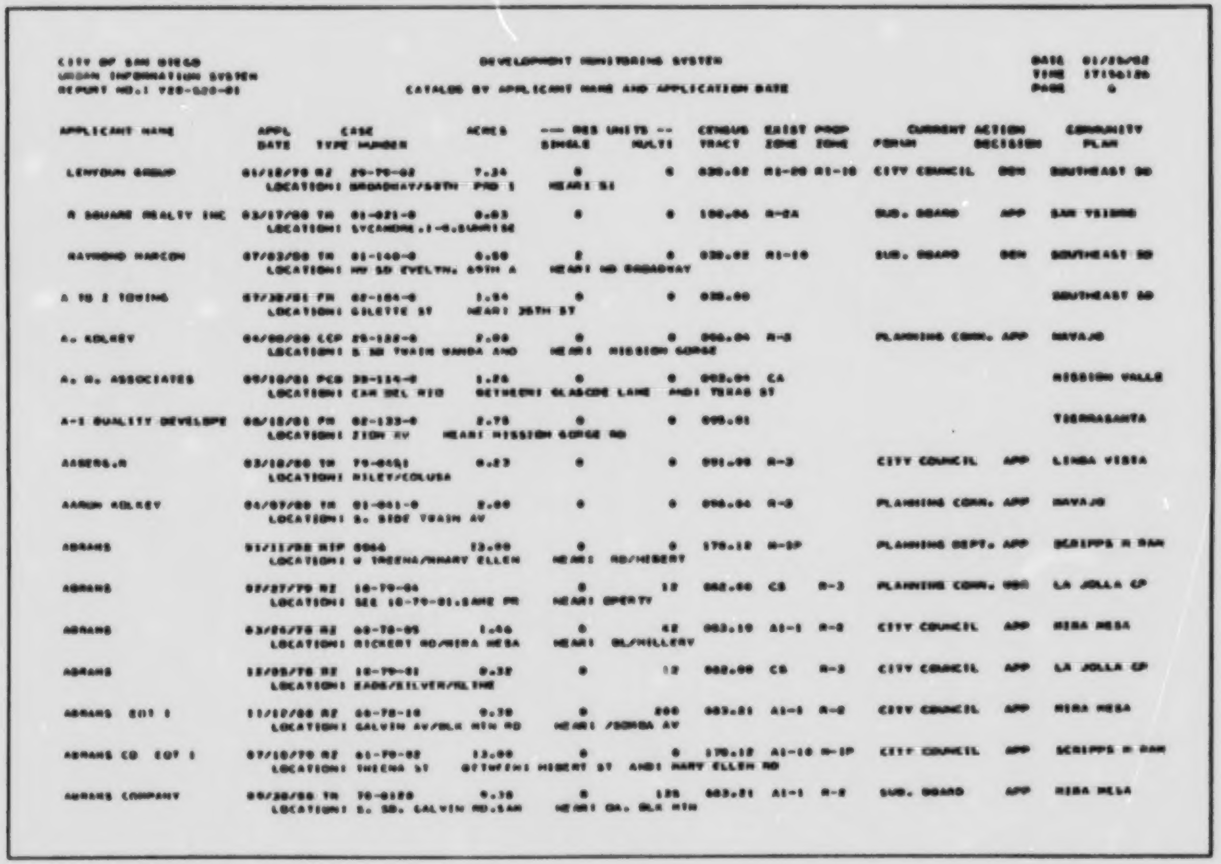
The Development Monitoring System (DMS), which will become fully operational by the mid-1990s, will be capable of accessing and summarizing various operational databases throughout RUIS which deal with development activity. It will provide population and housing projections based upon development permits being processed through RUIS. From the forecasts, DMS will measure the impact of new development on community facilities and monitor the adequacy of these facilities. Each city will also be able to monitor the impact of its policies on the physical development of their municipality. An example of output from the system as it operated in 1982 is provided as Attachment 2.

ATTACHMENT 1

RUIS CONCEPTUAL DESIGN


INTEGRATED RUIS HARDWARE/SOFTWARE
RUIS DATA BASE
Area
Environmental
Base Map
Land Records
Facility Networks
Street Network

ATTACHMENT 2



CITY OF SAN DIEGO
URBAN INFORMATION SYSTEM

DEVELOPMENT MONITORING SYSTEM
CATALOG BY APPLICANT NAME AND APPLICATION DATE

The Land Use Inventory is a record of every lot in the county. Each lot record is composed of three sub-records:

- The Parcel Record - provides lot size, amount of street frontage, zoning and general land use type;
- The Structure Record - provides information for building(s) on the parcel such as floor area, number of floors and lot coverage; and
- The Establishment Record - provides information on the types of use in the building(s).

A mid-year report is published on the amount and location of residential, commercial, industrial, public and vacant land use types.

Other modules in the development stages include:

- Land Use Regulation Module - for zoning and other land use regulation changes;
- Network Facilities Planning Module - will provide capabilities for analyzing networks such as water and sewer in order to plan system expansion; and
- Cadastral Mapping Module - will automate property ownership maps as required by the County Assessor; creation and updating of parcel maps will be automated.

The later module will be linked to the Shared Property System being developed by the County Assessor, Tax Collector and Auditor to maintain 800,000 property ownership records. The Shared Property System, when completed in 1990, will be used to support building permit, land use and zoning functions.

Data Collection

Data collection for RUIS is a joint effort which will eventually involve 18 cities, the County, governmental districts and utility agencies.

While the main data source for RUIS will be tax records; property ownership information will be available through on-line access to the County Assessment Records.

The main data source for the Land Development Module will be planning data on development applications, building permits, land use and zoning which will be input by various planning departments.

Strengths

The strengths of RUIS are as follows:

- Amount of data per parcel will be extensive;
- Comprehensive in its scope since it draws information from several databases; covers all properties in the County;
- Streamlines process of analyzing development issues, scheduling infrastructure expansion and maintenance and administering day-to-day operations;
- Updated on a continuous day-to-day basis; and
- Cost effective since expenses split between jurisdictions; shared database means shared costs and shared responsibility.

Weaknesses

The only major drawback of RUIS is that it will likely take 10 years to fully the implement the entire system.

APPENDIX B

REVIEW OF LAND MONITORING IN THE GREATER TORONTO AREA

INTRODUCTION

This appendix presents a review of the land monitoring systems currently in operation in each of the five regions in the Greater Toronto Area (GTA), namely: Durham Region, York Region, Peel Region, Halton Region, and Metro Toronto. In four of the five Regions, most relevant data for land monitoring could be found at the regional municipality level, so an analysis of land monitoring in each municipality in these Regions was not seen as necessary.

The advantages of focusing on land monitoring in the GTA using regional municipality data rather than local municipality data are obvious: coordinating, synchronizing, and standardizing data collection and output from 5 regions in a land monitoring system would be a great deal easier than doing so with 30 local municipalities. Where the relevant information is not available at the regional level, the steps necessary in order to collect and compile the necessary information from each of the local municipalities in that region are outlined.

In addition to the discussions of land monitoring by municipal bodies in the GTA, an analysis of other past (the Brethour/Dillon *Residential Land Inventory*), present (the Ministry of Municipal Affairs' PACS system), and possible future land monitoring efforts (the Ministry of Consumer and Commercial Relations' POLARIS) in the GTA will be examined and their implications for any potential land monitoring system's design will be discussed.

Summary-Residential Land Monitoring Chart.

The "Summary-Residential Land Monitoring" chart presented in Appendix A to facilitate the analysis of residential land monitoring options in other centres is also utilized in Appendix B as a means of comparing the types of information available from each Regional system. It is supplemented by a description and evaluation of land monitoring (from the point of view of utilizing the data for a GTA system) as well as a discussion of future plans for land monitoring.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: DURHAM REGION	Name of System: Development Tracking System
Phone: (416) 686-1651	
Contact: Bob Johnson, Planning Dept.	Updating Frequency: Continuous

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
– land area		X	X	X	X	
– unit potential		X	X	X		
– population potential						
– unit/dwelling type		X	X	X		■
– zoning						■
– lot sizes						■
– lot frontages						■
– owner name		X	X	X		
– ownership type						
– servicing status: sewer						■
water						■

DATA SOURCES			
		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	X
Zoning Maps/Records		Aerial Photos	
Rezoning Records		Field Surveys	
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)	X	Other:	
Land Use Maps			

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision X Neighbourhood/Community ___

If parcel, min. parcel size:

Coverage: City/Municipality ___ Regional X

SYSTEM SET-UP

Hardware: VMS Mainframe with Micros

Software: Informix SQL

Mapping: Manual

Future: Property Data System; MAPINFO

TYPES OF OUTPUT

Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	X
Other report(s):	

SYSTEM STRENGTHS

- Includes inactive land (identifies it, provide area estimate).
- Uses building permits to identify registered, no permit land.
- Many system improvements being made.

SYSTEM WEAKNESSES

- Lacks servicing information for land in approvals process.
- Lacks unit potential estimate and ownership for inactive land.

DURHAM REGION

The Regional Municipality of Durham is the fourth most populous region in the GTA and also the easternmost of the five regions. It's growth rate has increased markedly since 1986, and the Region has been closely monitoring residential development since the early 1980s.

DESCRIPTION OF EXISTING LAND MONITORING

The Region of Durham Planning Department is currently involved in four major activities that pertain to land monitoring:

- Development application monitoring;
- Official Plan review;
- Building activity monitoring; and
- Capital Works planning.

These activities and their significance for land monitoring in Durham Region are discussed below.

Development Application Monitoring

The Region of Durham's Planning Department uses the computerized Planning Management Information System to monitor development application activity. This system includes the Development Application Tracking System which monitors:

- Official Plan Amendments;
- Subdivision/Condominium applications;
- Zoning and rezoning applications; and
- Consent applications.

At present, the Region of Durham uses its Development Application Tracking System to monitor subdivision/condominium activity from the plan submitted stage through to building permit issuance. More specifically for residential land, the Development Application Tracking System monitors designated land in the following planning stages:

- Submitted or Pending Plan of Subdivision;
- Draft Approved Plan of Subdivision; and
- Registered Plan of Subdivision.

Various sources are used for acquiring data for the system. The primary source of information for the Development Application Tracking System is the Region's Subdivision and Condominium Application forms.

The Development Application Tracking System is also used as a historical reference for timing subdivision progress through the planning process. Data in the tracking system is most comprehensive since 1987; selected data from 1986 and earlier is presently being entered on the system to be comparable with the data from 1987 to present.

Although there were 813 consent applications in Durham in 1989, only a portion of these would have led to new housing units within the Region; thus, consent activity monitored through the tracking system is relatively small when compared to subdivision and condominium activity.

Official Plan Review and Related Studies

In addition to the stages monitored by the Development Application Tracking System, the acreage of vacant land which has been designated for future residential development, but which has no subdivision application, is monitored annually for the Region's Official Plan Review and other related studies including the annual *Residential Servicing & Financing Study*. This adds information on the following planning stage:

- No subdivision application (inactive land).

The Region's Official Plan maps and various other planning maps are used to determine blocks of vacant land which have future designated residential potential but no subdivision application. The areas of these blocks are gross expressions measuring net residential blocks exclusive of restricted lands. The areas are often planimetered from maps, or for small blocks, assessment data is sometimes used.

Building Permit Monitoring

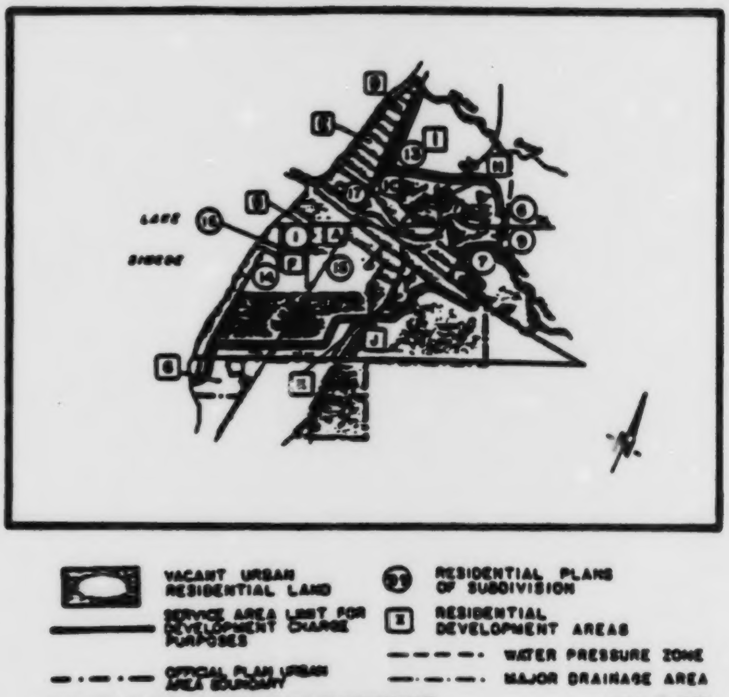
Building permit information is collected monthly from each of the municipalities in Durham Region and is entered into a database by the Regional Planning Department.

This data is then used to present aggregate information on building construction activity in the Region and to calculate the remaining lots within Registered Plans for which permits have not been issued. This is done by subtracting lots for which building permits have been issued from the total remaining lots to be built per Registered Plan.

In addition to tracking building permits by subdivision within the region, the planning department currently monitors starts, completions, and absorptions by registered plan through a sample of these activities. This is done in order to determine when a subdivision actually becomes built out.

DURHAM ATTACHMENT 1

BEAVERTON URBAN AREA


LAKE
SIMCOE
VACANT URBAN RESIDENTIAL LAND
SERVICE AREA LIMIT FOR DEVELOPMENT CHARGE PURPOSES
OFFICIAL PLAN URBAN AREA BOUNDARY
RESIDENTIAL PLANS OF SUBDIVISION
RESIDENTIAL DEVELOPMENT AREAS
WATER PRESSURE ZONE
MAJOR DRAINAGE AREA

PREPARED BY DURHAM REGION PLANNING DEPARTMENT

JULY 3, 1989

RESIDENTIAL PLANS OF SUBDIVISION IN THE BEAVERTON URBAN AREA

Reference Number	File Number	Applicant's Name	Subdivision Status	Number of Units (Unbuilt)
1	24263	Marcliffe Properties Inc.	Registered 1988	15
6	79060	Tropic Homes Ltd.	Registered 1989	19
			Registered 1987	3
7	82022	D. W. Taylor	Draft Approved	207
9	83016	Beaverton Brick & Tile	Draft Approved	46
10	22578	Lakelands Estates	Registered 1974	11
13	87091	Beaverton Thorah Dev.	Pending	204
14	88009	Stengel Dev's Ltd.	Pending	58
15	89006	Dolpark Const. Limited	Pending	174
16	89015	Marcliff Properties Inc.	Pending	35
17	89014C	Victoria Yacht Club	Pending	104

REMAINING RESIDENTIAL DEVELOPMENT AREAS IN THE BEAVERTON URBAN AREA

Reference Letter	Size in Hectares (Acres)	
A	3	(7)
B	2	(5)
D	1	(2)
E	1	(2)
F	6	(15)
G	8	(20)
H	10	(25)
I	25	(62)
J	10	(25)
K	1	(2)

Capital Works Plan

Using the current Capital Works Plan for sewer and water trunk lines and plant capacity expansion, Durham has indicated that it may be possible to provide a general timing for the provision of servicing to all residential land including unserviced plans of subdivision on the tracking system. This is not presently done however. Currently, the Capital Works Budget outlines the 1 year, 4 year and 10 year servicing plans for the Region as a whole.

A sample of output from the Region's *Residential Servicing & Financing Study* is provided as Attachment 1. Though this report shows only the total number of units unbuilt at each stage, information by dwelling type is also available from the system.

SYSTEM DETAILS

Scope

The Development Application Tracking System monitors land in subdivisions from plan submitted stage through to building permit issuance. Characteristics of subdivision plans monitored include subdivision planning status, unit potential by dwelling type, population potential, land area and ownership.

Related studies and the Official Plan Review process also provide information on land area for blocks of land designated as having residential potential in the Region's Official Plan that presently have no plan of subdivision.

The Development Application Tracking System monitors consent activity on a separate sub-system, however, the amount of data captured per new residential lot is minimal. The system also addresses the potential of new residential development through intensification or redevelopment since zoning and rezoning activity is tracked. Since not all municipal rezoning by-laws presently specify the specific development being proposed, it is difficult to determine unit potentials, however.

Data Compatibility

The dwelling type categories used in the tracking system differ somewhat from CMHC's categories. The Region has categories for single-detached, semi-detached, row, and apartments (these match CMHC's categories), as well as for link dwellings, seasonal residential, mobile homes and other dwelling types. Data for the latter four categories, however minimal, would have to be assigned to one of the four CMHC categories if both sets of data are to be used together.

Timing of Data Capture

The updating of the Development Application Tracking System is on a continuous day-to-day basis, with an annual residential land monitoring report. The industrial land monitoring report is updated annually, with periodic reports.

Building permits are monitored on a monthly basis with quarterly reports; copies of both the monthly and quarterly reports are sent to CMHC.

FUTURE PLANS FOR SYSTEM

Durham has started using the Property Data System (PDS), which is based on the Planning Management Information System. The PDS is being expanded and when in full operation, will run on a continuous update basis. The PDS is based on assessment data. It will also eventually include geocoded subdivisions. The present Development Application Tracking System and the PDS will eventually be linked using MAPINFO (geographic mapping software) and an update of Statistics Canada's Area Master File (AMF) longitude latitude system. The latter initializes the geographic base using the road network, street addresses and blockfaces. This new system will be capable of easily aggregating property-level data at the traffic zone, drainage zone, and Official Plan population zone levels.

The Planning Department wants to add employment data to the Property Data System at some point. They also plan to integrate servicing information from the Works Department and other Planning Department data.

Attempts have been made by the Planning Department to have a feasibility study undertaken for the implementation of a "full-scale" GIS; however, funds have not been available for such a study to date.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: YORK REGION	Name of System: (Unnamed) Subdivision Monitor
Phone: (416) 362-2464	
Contact: Allan Saunders, Planning Services	Updating Frequency: Continuous

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered Unbuilt	Draft Approved	In Process	Inactive	
- land area		X	X	X		
- unit potential		X	X	X		
- population potential						
- unit/dwelling type		X	X	X		■
- zoning						■
- lot sizes						■
- lot frontages						■
- owner name		X	X	X		
- ownership type						
- servicing status: sewer		X	X	X		■
water		X	X	X		■

DATA SOURCES			
		Assessment Records	X
Subdivision Maps/Records	X	Building Permit Info.	
Zoning Maps/Records		Aerial Photos	
Rezoning Records		Field Surveys	
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps			

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ___ Subdivision X
Neighbourhood/Community ___

If parcel, min. parcel size:

Coverage: City/Municipality ___ Regional X

SYSTEM STRENGTHS

- Provides detailed subdivision-specific summaries.

SYSTEM SET-UP

Hardware: IBM PC's
Software: BASIC programming; DBase III+
Mapping: None
Future: GIS

SYSTEM WEAKNESSES

- Does not include inactive land.
- Do not currently use building permits to identify registered land with no permits issued.
- Lacks servicing information for land in approvals process.

TYPES OF OUTPUT	
Subdivision status report	X
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	

YORK REGION

The Regional Municipality of York is presently the fastest growing region in the GTA. It is located immediately north of Metro Toronto. York Region presently has a detailed subdivision monitoring system in place.

DESCRIPTION OF EXISTING LAND MONITORING SYSTEM

The Region of York monitors land development by tracking the status of subdivision plans and by tracking consent activity. The Region's Planning Department monitors subdivisions while the Region's Land Division Committee monitors consent activity in East Gwillimbury, King and Whitchurch-Stouffville. A total of 113 consent applications were received in 1989 for these three municipalities. Consents in the other municipalities are monitored by each respective municipality's Committee of Adjustment.

Since the vast majority of development in the Region is centred in urban areas, and is undertaken via the subdivision approval process, this analysis focuses on the system used to monitor subdivision development in the Region.

The subdivision monitor covers residential, commercial and industrial land use categories and all nine municipalities in York Region. All vacant residential land in the following planning stages is monitored:

- Submitted or Pending Plan of Subdivision (proposed; application received);
- Draft Approved Plan of Subdivision; and
- Registered Plan of Subdivision.

Data is collected from the development application and status files submitted to the Region. It is estimated that 18 to 20 man-days a year are required to keep up this subdivision monitor. The subdivision information collected is contained in two different files:

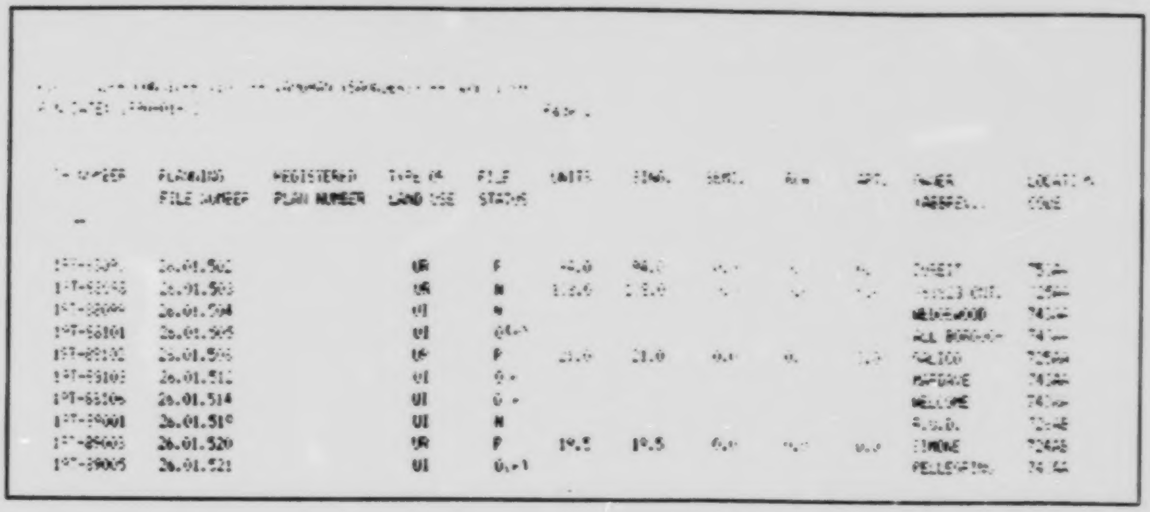
- A list of all subdivisions in the Region, arranged by municipality (see Attachment 1); and

- Subdivision specific information where the current status of a given application is summarized, in detail, into a one-page format (Attachment 1).

All of this subdivision-level data can be aggregated at either the municipal or traffic zone level.

Information on vacant residential lots in Registered Plans is gathered from assessment data. At the present time a student spends 6 to 8 weeks manually extracting all vacant lots from the year-end assessment roll using the land use activity codes. This annual exercise relies on the RU (residential urban) and VL

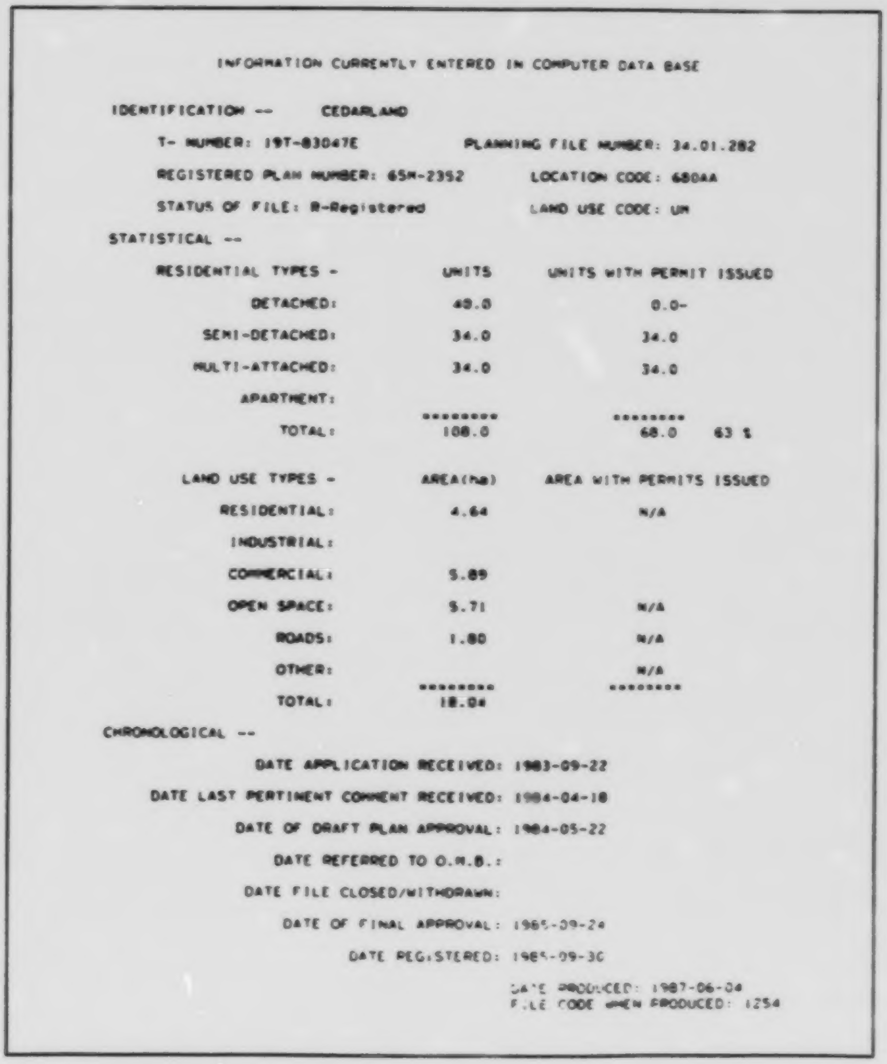
YORK ATTACHMENT 1



```
[illegible]
[illegible]                                                  [illegible]

T-NUMBER     PLANNING      REGISTERED   TYPE OF    FILE     UNITS   SING.   SEMI.   R/H   APT.   OWNER          LOCATION
             FILE NUMBER   PLAN NUMBER  LAND USE   STATUS                                        (ABBREV.)      CODE
 --

19T-[illegible]  26.01.502              UR         F        [illegible]  94.0  [illegible]                   [illegible]    [illegible]
19T-[illegible]  26.01.503              UR         N        [illegible]                                      [illegible]    [illegible]
19T-[illegible]  26.01.504              UI         N                                                         WEDGEWOOD      74[illegible]
19T-86101    26.01.505                  UI         [illegible]                                               ALL BOROUGH    74[illegible]
19T-[illegible]  26.01.50[illegible]    UR         F        [illegible]  21.0  0.0   0.   [illegible]        [illegible]    [illegible]
19T-[illegible]  26.01.51[illegible]    UI         [illegible]                                               MAPGROVE       740AA
19T-[illegible]  26.01.514              UI         [illegible]                                               WELLCOME       74[illegible]
19T-[illegible]  26.01.519              UI         N                                                         [illegible]    [illegible]
19T-[illegible]  26.01.520              UR         F        19.5    19.5    0.0   [illegible]   0.0          SIMONE         [illegible]
19T-[illegible]  26.01.521              UI         [illegible]                                               PELLEGRINO     74[illegible]
```



```
               INFORMATION CURRENTLY ENTERED IN COMPUTER DATA BASE

     IDENTIFICATION --     CEDARLAND

          T- NUMBER: 19T-83047E           PLANNING FILE NUMBER: 34.01.282

          REGISTERED PLAN NUMBER: 65M-2352       LOCATION CODE: 680AA

          STATUS OF FILE: R-Registered           LAND USE CODE: UM

     STATISTICAL --

          RESIDENTIAL TYPES -           UNITS      UNITS WITH PERMIT ISSUED

                     DETACHED:          40.0              0.0-

                SEMI-DETACHED:          34.0             34.0

               MULTI-ATTACHED:          34.0             34.0

                    APARTMENT:
                                      ========          ========
                        TOTAL:         108.0             68.0    63 %

             LAND USE TYPES -          AREA(ha)    AREA WITH PERMITS ISSUED

                  RESIDENTIAL:          4.64               N/A

                   INDUSTRIAL:

                   COMMERCIAL:          5.89

                  OPEN SPACE:           5.71               N/A

                        ROADS:          1.80               N/A

                        OTHER:                             N/A
                                      ========          ========
                        TOTAL:         18.04

     CHRONOLOGICAL --

                  DATE APPLICATION RECEIVED: 1983-09-22

        DATE LAST PERTINENT COMMENT RECEIVED: 1984-04-18

                  DATE OF DRAFT PLAN APPROVAL: 1984-05-22

                     DATE REFERRED TO O.M.B.:

                  DATE FILE CLOSED/WITHDRAWN:

                      DATE OF FINAL APPROVAL: 1985-09-24

                             DATE REGISTERED: 1985-09-30

                                          DATE PRODUCED: 1987-06-04
                                          FILE CODE WHEN PRODUCED: 1254
```

(vacant land) codes to separate built and unbuilt land within Registered Plans. A lot moves from VL to RU once a dwelling unit is occupied. Land with construction activity is still classified as VL. The resultant vacant lot inventory is stored on microfiche and is not presently used in conjunction with the subdivision monitor. Current indications are that the Region should have the necessary hardware to electronically extract this data from the assessment tapes by 1991.

At the present time, the planning department does track building permit activity in the region but does not match this information to lots within registered plans. To develop an inventory of registered lots in subdivisions with no permit issued might require a separate visit to each of the municipalities.

SYSTEM DETAILS

Scope

York Region monitors subdivisions from the plan submitted/pending stage to the registered stage. Characteristics included for subdivision plans include land area, owner name, unit potential by dwelling type and planning status.

Information on vacant residential lots is also gathered from assessment data; however, by the time this data is gathered it is often out of date and could not be used in conjunction with the subdivision monitoring system to provide a continuum of information from the "in process" stage to the registered "permit issued" stage.

The system excludes inactive residential land (with no plan of subdivision) and undesignated land.

Residential land with redevelopment or intensification potential is presently monitored by York Region if it is done through the subdivision/condominium approval process. The Region also receives development proposals for presently undesignated or rural land; these plans are tracked regardless of whether or not an Official Plan Amendment to redesignate the subject land as future residential has been applied for.

Data Compatibility

The Region's dwelling type categories of detached, semi-detached, multi-attached, and apartment basically match CMHC's categories.

Timing of Data Capture

The subdivision monitor data is updated on a daily basis; every 6 months, this subdivision application information is summarized in the 6 month and 12 month reports for the Ontario Ministry of Municipal Affairs. Reports can be generated at any time and in other formats however.

The vacant lot data is updated annually from the assessment files.

FUTURE PLANS FOR SYSTEM

The Region is getting a mainframe computer and is considering GIS. The mainframe chosen will have the capability needed for GIS implementation. Since all subdivision plans monitored on the present system are geocoded, subdivision activity mapping will be possible with a GIS. The proposed GIS would also be used to track vacant lots within Registered Plans and existing land use.

Presently, York Region is waiting for the results of Markham's study on GIS. Using ARCINFO and a co-ordinate system of geography, it is estimating that it would take three years to input Markham's co-ordinates. Markham's system would be portable into POLARIS. The Region plans to co-ordinate the various municipal GIS projects being undertaken in its municipalities (Markham, Richmond Hill) to ensure portability into the Region's planned system.

Also, the Engineering Department will be formulating a long-term (20 year) plan for the scheduling of servicing; presently no plan exists and future servicing priorities have not been allocated. This will make possible a timeframe for the probable phasing of future residential development.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: PEEL REGION	Name of System: Development Control Inventory
Phone: (416) 791-9400, Ext. 251	
Contact: Katharine Bladen, Planning Dept.	Updating Frequency: Continuous

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered	Draft Approved	In Process	Inactive	
– land area		X	X	X		
– unit potential		X	X	X		
– population potential						
– unit/dwelling type		X	X	X		■
– zoning		X	X	X		■
– lot sizes						■
– lot frontages						■
– owner name		X	X	X		
– ownership type						
– servicing status: sewer						■
water						■

DATA SOURCES		Assessment Records	
Subdivision Maps/Records	X	Building Permit Info.	
Zoning Maps/Records	X	Aerial Photos	
Rezoning Records		Field Surveys	
General Plan Designation	X	Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps	X		

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Work's Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ____ Subdivision X Neighbourhood/Community ____

If parcel, min. parcel size:

Coverage: City/Municipality ____ Regional X

SYSTEM SET-UP

Hardware: Micro-Computers

Software: DBase III+, Lotus 1-2-3

Mapping: None

Future: INTERGRAPH GIS

TYPES OF OUTPUT	
Subdivision status report	X
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	

SYSTEM STRENGTHS

- Building Permits monitored; data found in the Build Files.

SYSTEM WEAKNESSES

- Does not include inactive land.
- Not presently linked with Build Files or PAUS.
- Lacks servicing information for land in approvals process.

PEEL REGION

The Regional Municipality of Peel is the second most populous region in the Greater Toronto Area (GTA) outside of Metro Toronto, and has the second fastest rate of growth. It is located immediately west of Metro Toronto and York Region, and just east of Halton Region.

DESCRIPTION OF EXISTING LAND MONITORING

The Region of Peel's Planning Department monitors subdivision and condominium applications, however, consent activity is monitored by the Region's Land Division Committee. While there were 503 new consent applications in total in 1989 (for all land use types), this volume is small in comparison to subdivision and condominium activity.

The following analysis focuses on subdivision and condominium applications only.

The Region of Peel has created four systems to monitor the following (system name in brackets):

- Development control activity (Development Control Inventory);
- Building activity (Build Files);
- Existing land use (Street Address Based Information System); and
- Projected land use (Projection Analysis Unit System).

Although these four systems are presently not linked, they are closely inter-related and each must be examined in order to obtain a complete picture of how the Region of Peel is monitoring land.

Except for the Street Address Based Information System (SABIS), the standard unit of measurement is the small geographical unit (SGU); the SGU is the polygon resulting from the overlay of traffic zones, sewer zones, water pressure zones, census tracts and other service area boundary systems. Each of the four systems will be examined in turn.

Development Control Inventory

The Development Control Inventory monitors all vacant land against which a plan of subdivision exists at any stage of the planning process. For vacant residential land, the Inventory monitors land in the following planning stages:

- Submitted or Pending Plan of Subdivision;
- Draft Approved Plan of Subdivision; and
- Registered Plan of Subdivision.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: PEEL REGION	Name of System: Build Files
Phone: (416) 791-9400, Ext. 251	
Contact: Katharine Bladen, Planning Dept.	Updating Frequency: Continuous

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
- land area	X					
- unit potential	X					
- population potential						
- unit/dwelling type	X					
- zoning	X					
- lot sizes						
- lot frontages						
- owner name	X					
- ownership type						
- servicing status: sewer						
water						

DATA SOURCES		Assessment Records	
Subdivision Maps/Records		Building Permit Info.	X
Zoning Maps/Records		Aerial Photos	
Rezoning Records		Field Surveys	
General Plan Designation		Land Titles Info.	
Public Works (Servicing)		Other:	
Land Use Maps			

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel X Subdivision ____

Neighbourhood/Community ____

If parcel, min. parcel size:

Coverage: City/Municipality ____ Regional X

SYSTEM SET-UP

Hardware: Micro-computers

Software: DBase III+, Lotus 1-2-3

Mapping: None

Future: Intergraph GIS

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	X

SYSTEM STRENGTHS

- Allows Region to differentiate number of lots with building permits issued and those without building permits within Registered Plans of Subdivision.

SYSTEM WEAKNESSES

- Not presently linked with Development Control Inventory or PAUS.

SUMMARY – RESIDENTIAL LAND MONITORING

Municipality/Region: PEEL REGION	Name of System: Projection Analysis Unit System (PAUS)
Phone: (416) 791-9400, Ext. 251	
Contact: Katharine Bladen, Planning Dept.	Updating Frequency: Annual

Characteristics included: (by development status)	VACANT LAND					
	Designated					Undesignated
	Permit Issued	Registered No Permit	Draft Approved	In Process	Inactive	
– land area					X*	
– unit potential						
– population potential						
– unit/dwelling type						■
– zoning						■
– lot sizes						■
– lot frontages						■
– owner name						
– ownership type						
– servicing status: sewer						■
water						■

* This area includes all land which is designated and vacant (includes vacant land within planning approvals process).

DATA SOURCES			
Subdivision Maps/Records		Assessment Records	X
Zoning Maps/Records		Building Permit Info.	
Rezoning Records		Aerial Photos	X
General Plan Designation		Field Surveys	
Public Works (Servicing)		Land Titles Info.	
Land Use Maps		Other: Development Control Inventory, Build Files	

WHO INPUTS DATA?	
Planning Dept.	X
Building Dept.	
Public Works Dept.	
Land Registry	
Assessors	
Other:	

SYSTEM SCOPE

Information Base: Parcel ____ Subdivision ____ Neighbourhood/Community X

If parcel, min. parcel size:

Coverage: City/Municipality ____ Regional X

SYSTEM SET-UP

Hardware: Micro-computers

Software: Lotus 1-2-3

Mapping:

Future: Intergraph GIS

TYPES OF OUTPUT	
Subdivision status report	
Subdivision status report with maps	
Vacant land at various stages	
Vacant land at various stages with maps	
Other report(s):	X

SYSTEM STRENGTHS

- Can determine inactive land but must use Development Control Inventory and Build Files to determine this (to eliminate vacant designated land in the planning approvals process).

SYSTEM WEAKNESSES

- Not presently linked with Development Control Inventory or Build Files.

Once a plan of subdivision is registered, it is put also onto SABIS (described below).

The information for this system is obtained from Subdivision and Condominium Application Forms, and Subdivision and Condominium Circulation and Status Sheets.

A copy of a sample of the system output is provided as Attachment 1. The example provided does not illustrate all of the data which is contained in the inventory, only that which is regularly reported. In addition to the information shown, data on land area and ownership are also available. Each record is assigned an SGU code.

Build Files

The Build Files are a 100 percent sample of the building permit records, containing information such as building type, building value, square footage and builder name. While Durham Region also uses building permit data for tracking activity, the Peel Region's Build Files are more comprehensive in terms of information provided.

The Build Files contain data for the years since 1986 and are used as an indicator of land consumption. While they are not presently linked with the Development Control System, a list of all building permits issued per Registered Plan can be produced. The number of units for which a building permit has been issued can then be subtracted from the total inventory of lots remaining to obtain a new figure for lots without a permit issued. Each record is assigned an SGU code.

A copy of a sample of the system output is provided as Attachment 2. Again, not all types of information available from the Build Files are illustrated in this example.

Street Address Based Information System (SABIS)

SABIS is a single line street network for existing land use in Peel Region. SABIS now uses Energy Mines and Resources National Topographic Survey (NTS) digital files as it's basic data source (base map).

Once a subdivision plan is registered, it is assigned an address, digitized, and put onto this network. Individual registered subdivisions can be monitored for the number of built and vacant lots, however, this is not done at present. Updating of SABIS is done by a service bureau, which has the necessary computer capacity, using ARCINFO (GIS software) in a VAX environment. Peel's file includes road networks and street name data for over 250 new subdivisions. The SABIS data for the Town of Caledon is linked with assessment data and the SABIS data for Brampton and Mississauga will also be linked once the new GIS is operating.

This kind of system is necessary for looking at the potential for intensification; however, this is not presently done in Peel.

PEEL ATTACHMENT 1

SUBDIVISIONS
REGISTERED

YEAR END REPORT 1989
REGION OF PEEL
PLANS OF SUBDIVISION

FILE #	MUN	REC'D	DRAFTAP	FINALAP	REG'D	REGPLAN	USE	SF	SD	TH	APT	RSV	TOTAL
** MUNC 05													
21T-83014M	05	04/27/83	01/12/88	10/25/89	12/07/89	M-939	R/C	64	0	0	0	0	64
21T-83019M	05	06/13/83	05/28/87	09/25/89	09/27/89	M-941	R	113	0	0	0	9	122
21T-84002M	05	01/27/84	02/28/85	01/02/89	01/06/89	M-882	R	70	0	0	0	0	70
21T-84009M	05	02/01/84	02/28/85	03/16/89	03/28/89	M-903	R	50	0	0	0	4	54

SUBDIVISIONS
DRAFT APPROVED

YEAR END REPORT 1989
REGION OF PEEL
PLANS OF SUBDIVISION

FILE #	MUN	REC'D	DRAFTAP	FINALAP	REG'D	REGPLAN	USE	SF	SD	TH	APT	RSV	TOTAL
** MUNC 05													
21T-84019M	05	04/02/84	08/21/89	/ /	/ /		R	12	0	0	0	0	12
21T-85024M	05	09/04/85	06/01/89	/ /	/ /		R/C	107	54	545	603	0	1309
21T-86020M	05	02/27/86	05/05/89	/ /	/ /		R/C	99	0	12	0	0	111
21T-86071M	05	08/21/86	04/13/89	/ /	/ /		R/C	294	0	179	425	0	898

SUBDIVISIONS
RECEIVED

YEAR END REPORT 1989
REGION OF PEEL
PLANS OF SUBDIVISION

FILE #	MUN	REC'D	DRAFTAP	FINALAP	REG'D	REGPLAN	USE	SF	SD	TH	APT	RSV	TOTAL
** MUNC 05													
21T-89002M	05	01/24/89	/ /	/ /	/ /		R	395	0	238	187	0	820
21T-89004M	05	02/09/89	/ /	/ /	/ /		R	0	0	56	4542	0	4598
21T-89006M	05	/ /	/ /	/ /	/ /			0	0	0	0	0	0
21T-89009M	05	02/09/89	/ /	/ /	/ /		I	0	0	0	0	0	0

Projection Analysis Unit System (PAUS)

PAUS monitors all existing land use within SGUs using aerial photographs. The system uses this information as well as data from the other three systems, and the standard assessment year-end file, to project future land use and population. Specifically, the amount of developed and designated land, by five land use categories, is provided along with population projections for each SGU in the Region. Also, the existing number of dwellings are provided by type, resident population, and tenure. Examples of PAUS output are provided as Attachment 3.

PAUS can be used to estimate the amount of designated vacant residential land in each SGU; however, this would include all unbuilt residential land including vacant land in the planning process. Land in the planning process would have to be separated from total vacant designated land to arrive at residential land for which no plans of subdivision exist (inactive land).

The Assessment file provides a monitor of where growth occurred over the past year and also provides the number of built dwelling units and population per property. The Development Control Inventory and Build Files give an idea of what will be built in the next few years and what is presently being built. Altogether, this information is the basis for making the SGU land use and population projections in PAUS.

SYSTEM DETAILS

Scope

None of Peel Region's systems include land designated residential without a subdivision plan submitted against it, or undesignated land (now rural or agricultural). The Development Control Inventory picks up land from the time a plan of subdivision is submitted until it is registered. After registration, the subdivision is monitored by the Build Files. After building completion, the land is still tracked by both SABIS and PAUS.

The major characteristics of subdivision plans included in the Development Control Inventory are owner name, area, unit potential by dwelling type and planning status.

Underutilized land can be identified through the PAUS database. However, intensification potential will not be addressed until the new GIS is operating. Redevelopment potential of land is not addressed by the system, although all new redevelopment is captured once a new plan of subdivision has been submitted.

Data Compatibility

The dwelling type categories used are single-detached, semi-detached, row, apartments, and seasonal residential. The latter category would have to be assigned to one of the four CMHC categories if both databases are to be used together.

PEEL ATTACHMENT 2

RESIDENTIAL BUILDING PERMITS (UNITS) BY MONTH AND TYPE:
MISSISSAUGA, JANUARY 1 - JUNE 30, 1984 - 1989

TABLE 9

	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1989							
SINGLE FAMILY DETACHED	170	170	268	351	234	293	1,486
SEMI-DETACHED	0	0	0	0	0	0	0
APARTMENTS	408	497	0	265	369	0	1,539
OTHERS	141	0	0	157	7	0	305
TOTAL	719	667	268	773	610	293	3,330
VALUE (000's)	78,323	74,205	50,094	115,532	74,799	51,897	444,850

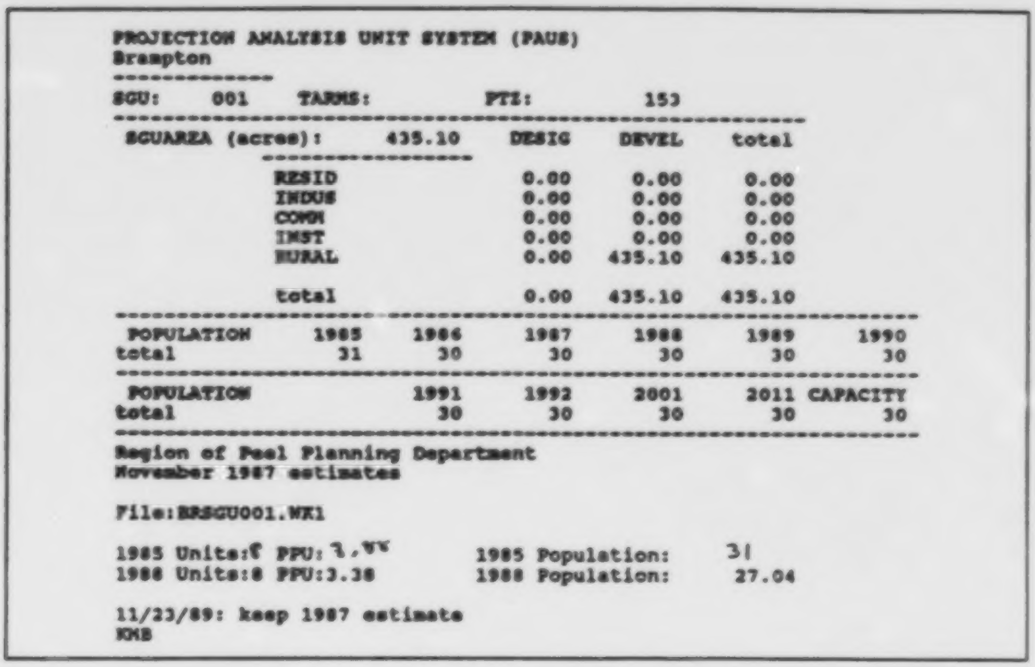
	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1988							
SINGLE FAMILY DETACHED	138	200	485	512	439	339	2,113
SEMI-DETACHED	0	0	0	0	0	0	0
APARTMENTS	436	0	1,421	0	0	1,008	2,865
OTHERS	229	76	59	173	26	0	563
TOTAL	803	276	1,965	685	465	1,347	5,541

HOUSING STARTS BY MONTH AND TYPE : MISSISSAUGA
JANUARY - JUNE, 1985 - 1989

TABLE 4

	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1989							
SINGLE FAMILY DETACHED	120	76	175	304	296	209	1180
SEMI - DETACHED							0
APARTMENTS	846	592	155	342	265	369	2569
ROW	12	56	83		77	96	324
TOTAL	978	724	413	646	638	674	4073
1988							
SINGLE FAMILY DETACHED	88	136	320	487	446	325	1802
SEMI - DETACHED							0
APARTMENTS	224		180	1012	466		1882
ROW		139	156	39	121	46	501
TOTAL	312	275	656	1538	1033	371	4185

PEEL ATTACHMENT 3



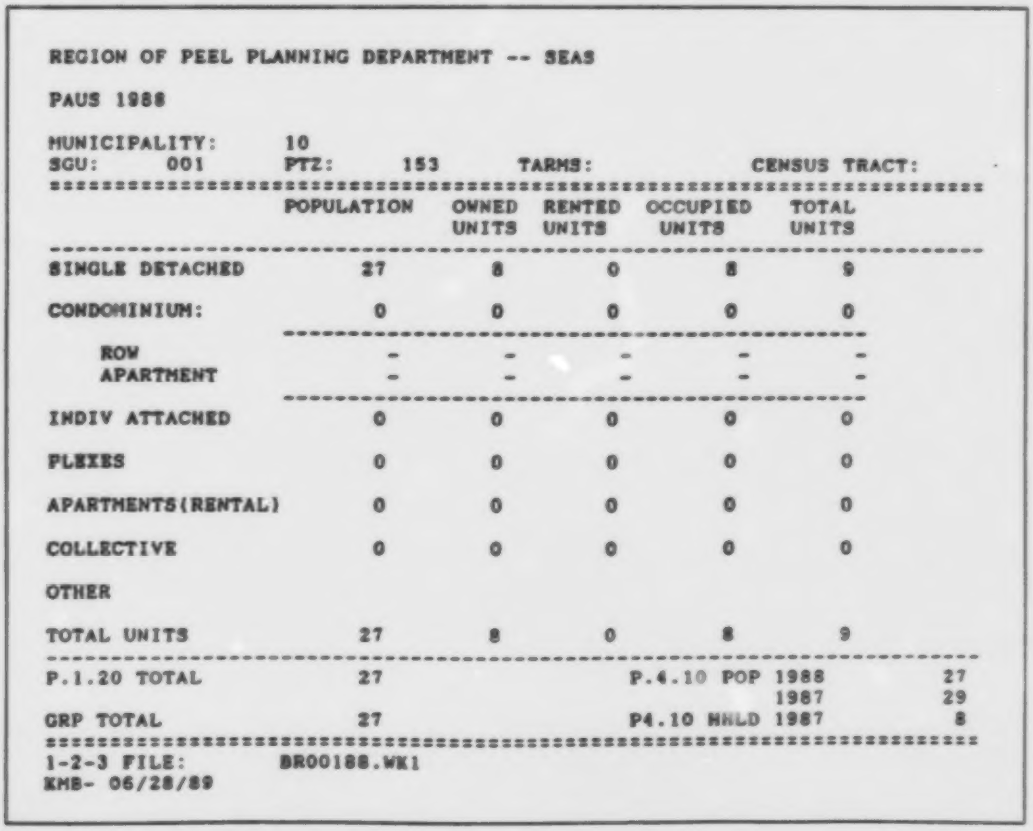
```
PROJECTION ANALYSIS UNIT SYSTEM (PAUS)
Brampton
-------------
SGU:    001    TARMS:         PTZ:          153
---------------------------------------------------------
 SGUAREA (acres):      435.10    DESIG     DEVEL     total
             -----------------
             RESID                0.00      0.00      0.00
             INDUS                0.00      0.00      0.00
             COMM                 0.00      0.00      0.00
             INST                 0.00      0.00      0.00
             RURAL                0.00    435.10    435.10

             total                0.00    435.10    435.10
------------------------------------------------------------------
 POPULATION      1985      1986      1987      1988      1989      1990
total              31        30        30        30        30        30
------------------------------------------------------------------
 POPULATION                1991      1992      2001      2011 CAPACITY
total                        30        30        30        30        30
------------------------------------------------------------------
Region of Peel Planning Department
November 1987 estimates

File:BRSGU001.WK1

1985 Units:8 PPU:3.88          1985 Population:     31
1988 Units:8 PPU:3.38          1988 Population:      27.04

11/23/89: keep 1987 estimate
KMB
```



```
REGION OF PEEL PLANNING DEPARTMENT -- SEAS

PAUS 1988

MUNICIPALITY:      10
SGU:      001      PTZ:      153       TARMS:              CENSUS TRACT:
==========================================================================
                   POPULATION    OWNED   RENTED   OCCUPIED    TOTAL
                                 UNITS    UNITS    UNITS      UNITS
--------------------------------------------------------------------------
SINGLE DETACHED           27        8        0        8          9

CONDOMINIUM:               0        0        0        0          0
                   ----------------------------------------------
    ROW                    -        -        -        -          -
    APARTMENT              -        -        -        -          -
                   ----------------------------------------------
INDIV ATTACHED             0        0        0        0          0

PLEXES                     0        0        0        0          0

APARTMENTS(RENTAL)         0        0        0        0          0

COLLECTIVE                 0        0        0        0          0

OTHER

TOTAL UNITS               27        8        0        8          9
--------------------------------------------------------------------------
P.1.20 TOTAL              27                      P.4.10 POP 1988        27
                                                             1987        29
GRP TOTAL                 27                      P4.10 HHLD 1987         8
==========================================================================
1-2-3 FILE:        BR00188.WK1
KMB- 06/28/89
```

Another problem is that the Assessment File data is not compatible with Registered Plan data.

Timing of Data Capture

Data on the Development Control Inventory, Build Files, and SABIS are updated on a continuous basis. PAUS is updated annually.

The Development Control Inventory report is generated semi-annually (mid-year and year-end), while the Build File report is generated monthly. SABIS is a computerized map without reports, while PAUS information is reported annually.

FUTURE PLANS FOR SYSTEMS

In the next 5 years, the Region of Peel is planning to implement GIS. The INTERGRAPH system has been chosen after a feasibility study was conducted by Utility Graphics Consultants (UGC) for the Cities of Brampton and Mississauga, their respective hydro commissions, and the Region of Peel. Eventually, the Planning Department will be able to link SABIS with the year-end assessment file.

After ARC/INFO data is converted, a link can be made between the year-end assessment data and SABIS (for Brampton and Mississauga) through a process of matching street addresses. All four systems examined can then be linked, and a new database will then be built on development activity. Since the information in all systems is geocoded, the potential will exist for existing and potential land use inventories, housing analysis and urban growth monitoring.

POLARIS is expected to be incorporated when GIS is implemented. The Region's proposed cadastral fabric meets both POLARIS and Ministry of Natural Resources' Ontario Base Map (OBM) Standards.

HALTON REGION

The Regional Municipality of Halton is the least populous region in the Greater Toronto Area (GTA); however, it's rate of population growth is on the increase. Halton Region is the westernmost region in the GTA and it encompasses parts of both the Toronto and Hamilton Census Metropolitan Areas.

DESCRIPTION OF EXISTING LAND MONITORING SYSTEM

Subdivision and condominium activity covers the vast majority of total development activity in the Region. Consent applications, which are monitored by the Region's Land Division Committee, account for most development applications in rural areas. In 1989, there were 300 new consent applications in total in Halton Region.

Halton Region's Planning Department monitors subdivision and condominium applications from the date applications are received until they are registered. Within a day or two after its registration, a plan goes to the local municipality which deals with the issuance of building permits.

The Region uses the Automated Development Application Processing and Tracking (ADAPT) system for monitoring development applications. The following planning stages, among others, are identified on the system's "DevFiles" data file:

- Submitted or Pending Plan of Subdivision;
- Draft Approved Plan of Subdivision; and
- Registered Plan of Subdivision.

The system is based on the Region's computerized data bank of development applications which include the following activities, among others:

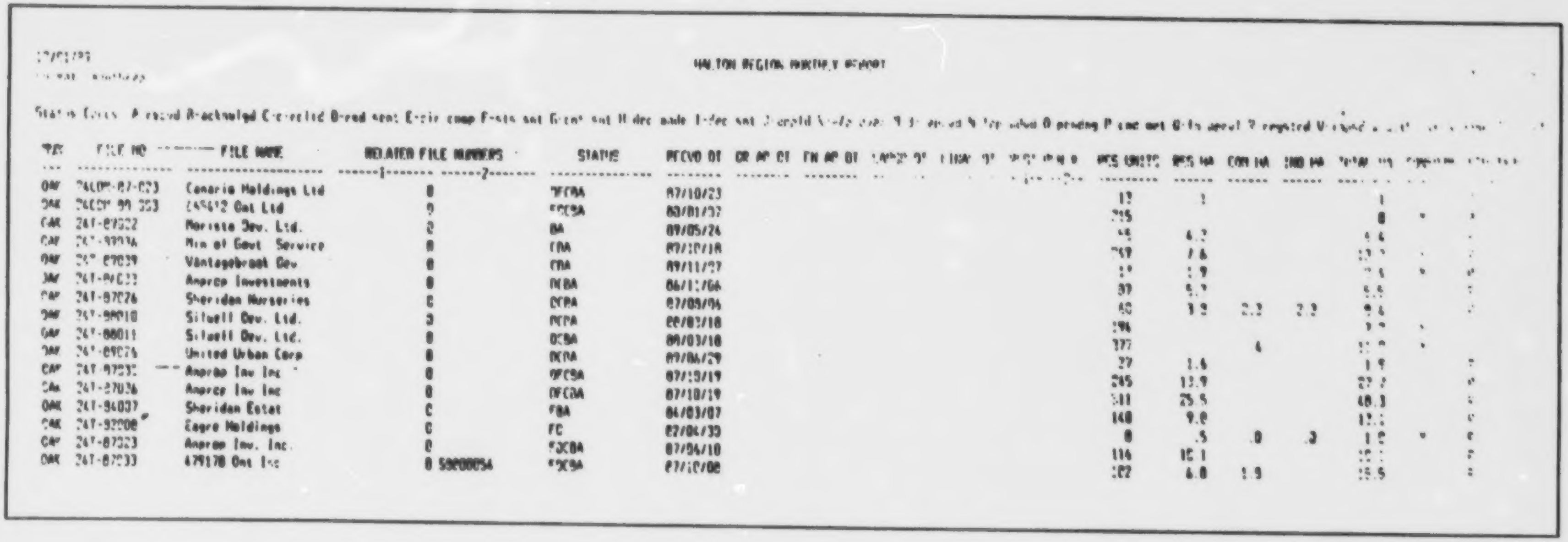
- Subdivision/condominium applications;
- Consents and variances; and
- Official Plan Amendments and zoning bylaws.

Each application has a maximum of 256 data fields and all data is put into the system by the Region. All system data can be aggregated to sewer, water or traffic zone level, or to the planning district or municipality level.

The Planning Department does not currently use assessment data.

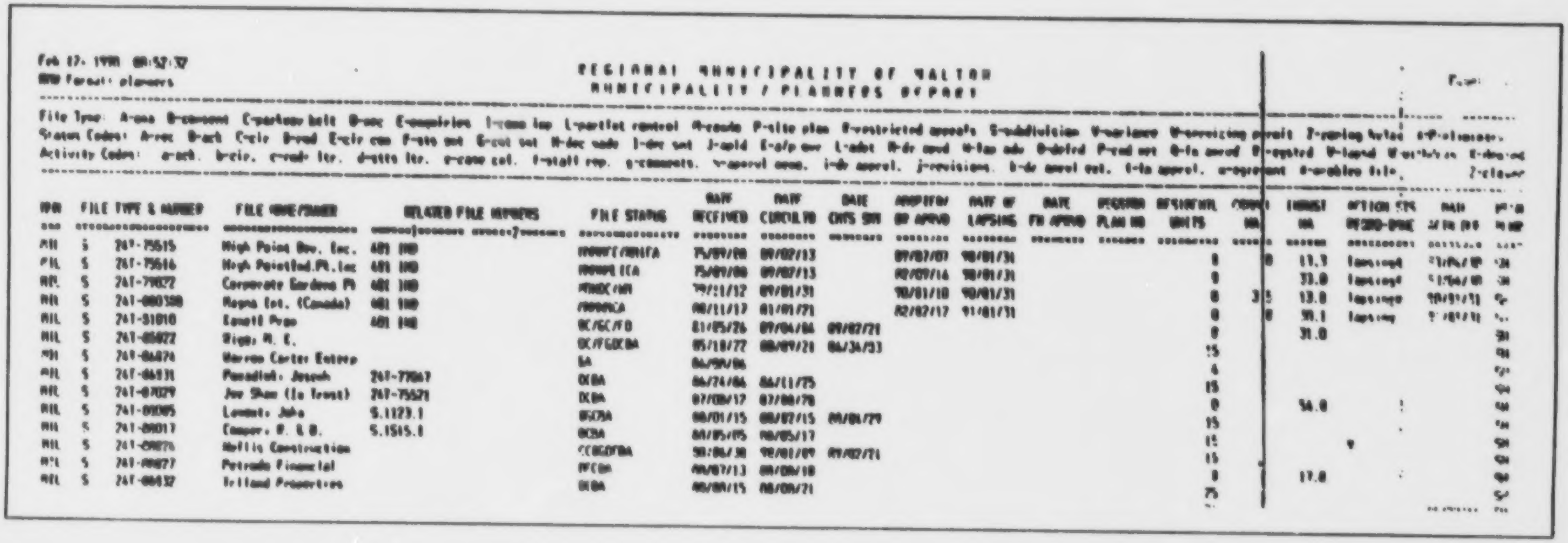
A copy of a sample of the output from the ADAPT system is provided as Attachment 1. The examples included do not show the entire range of information (maximum of 256 data fields) available on the system.

HALTON ATTACHMENT 1



HALTON REGION MONTHLY REPORT

MUN	FILE NO	FILE NAME	RELATED FILE NUMBERS 1	2	STATUS	RECVD DT	CR AP DT	FN AP DT	RES UNITS	RES HA	COM HA	IND HA	TOTAL HA
OAK	24CDM-87-023	Canaria Holdings Ltd	0		FCBA	87/10/23			13	1			1
OAK	24CDM-89-033	845612 Ont Ltd	0		FCCBA	88/01/07			215				8
OAK	241-87022	Morista Dev. Ltd.	0		BA	89/05/26			48	6.2			6.6
OAK	241-89036	Min of Govt Service	0		CBA	87/10/18			259	7.6			[illegible]
OAK	241-87039	Vantagebrook Dev	0		CBA	89/11/27			[illegible]	1.9			[illegible]
OAK	241-86033	Anprop Investments	0		DCBA	86/11/06			37	5.7			5.5
OAK	241-87026	Sheridan Nurseries	0		DCBA	87/09/06			48	3.2	2.2	2.2	9.6
OAK	241-88010	Silwell Dev. Ltd.	0		FCBA	88/03/18			196				[illegible]
OAK	241-88011	Silwell Dev. Ltd.	0		DCBA	88/03/18			377		6		[illegible]
OAK	241-89026	United Urban Corp	0		DCBA	89/06/29			27	1.6			1.9
OAK	241-87032	Anprop Inv Inc	0		DFCBA	87/10/19			205	13.9			[illegible]
OAK	241-87036	Anprop Inv Inc	0		DFCBA	87/10/19			511	25.5			40.3
OAK	241-86037	Sheridan Estat	0		FBA	86/03/07			140	9.0			[illegible]
OAK	241-92008	Eagre Holdings	0		FC	87/06/30			0	.5	.0	.0	[illegible]
OAK	241-87023	Anprop Inv. Inc.	0		FDCBA	87/06/10			116	10.1			[illegible]
OAK	241-87033	479178 Ont Inc	0	S9000054	FDCBA	87/10/08			102	6.0	1.9		15.5



Feb 17, 1990 08:52:37

REGIONAL MUNICIPALITY OF HALTON
MUNICIPALITY / PLANNERS REPORT

MUN	FILE TYPE & NUMBER		FILE NAME/OWNER	RELATED FILE NUMBERS 1	2	FILE STATUS	DATE RECEIVED	DATE CIRCULTD	DATE CMTS SNT	ADOPTION/DR APPRVD	DATE OF LAPSING	DATE FN APPRVD	REGSTRD PLAN NO	RESIDNTL UNITS	COMMRCL HA	INDUST HA	ACTION STS RECRD-DATE
MIL	S	241-75515	High Point Dev. Inc.	401 100		[illegible]	75/09/08	89/02/13		89/07/07	90/01/31			0	0	11.3	Lapsing
MIL	S	241-75516	High PointInd.Pk.Inc	401 100		[illegible]	75/09/08	89/02/13		82/07/16	90/01/31			0		33.0	Lapsing
MIL	S	241-79022	Corporate Gardens Pk	401 100		[illegible]	79/11/12	89/01/31		90/01/10	90/01/31			0	3.5	13.0	Lapsing
MIL	S	241-880358	Magna Int. (Canada)	401 100		[illegible]	88/11/17	81/01/21		82/02/17	91/01/31			0	0	30.1	Lapsing
MIL	S	241-31010	Lowell Prop	401 100		DC/GC/FD	81/05/26	89/04/06	89/02/21					0		31.0	
MIL	S	241-85022	Riggs, M. E.			DC/FGDCBA	85/10/22	88/09/21	[illegible]					15			
MIL	S	241-86074	Warren Carter Enterp			BA	86/09/06							6			
MIL	S	241-86031	Panadiol, Joseph	241-77067		DCBA	86/24/06	86/11/25						15			
MIL	S	241-87029	Joe Shaw (In Trust)	241-75521		DCBA	87/08/17	87/08/28						0		54.0	
MIL	S	241-88005	Lommit, John	S.1123.1		BGCBA	88/01/15	88/02/15	89/06/29					15			
MIL	S	241-88017	Cooper, R. & B.	S.1515.1		DCBA	88/05/05	88/05/17						15			
MIL	S	241-89026	Mellis Construction			CCBGDFBA	90/06/30	90/01/09	89/02/21					15			
MIL	S	241-88077	Petrado Financial			FFCBA	88/07/13	88/08/18						0		17.0	
MIL	S	241-88032	Trilland Properties			DCBA	88/08/15	88/08/21						75			

SYSTEM DETAILS

Scope

Halton Region monitors only residential land with plans of subdivision from the plan received until the plan registered stage.

The Region's ADAPT system does not include residential land that has no plan of subdivision (inactive residential land), presently undesignated land, or information on plans beyond the registration stage; building permit issuance is dealt with by individual municipalities. It does monitor all land use categories however.

Subdivision plan characteristics monitored include land area, unit potential by dwelling type, and name of owner. The monitor does not include data on the availability of sewer and water servicing at the subdivision plan level, however, it does provide road access information.

It also does not address future residential potential from infill, intensification or redevelopment, unless it is contained in a subdivision, condominium or consent application.

Data Compatibility

The Region's dwelling type categories include single-family, semi-detached, townhouse, apartment, and senior citizen units. If CMHC dwelling type data is to be used together with these dwelling type categories, the senior citizen units would have to be assigned to another category.

Timing of Data Capture and Report Characteristics

Data on ADAPT's "DevFiles" is updated on a daily basis and reported bi-weekly for use by regional planners and monthly for other users. Other reporting is done periodically as required.

FUTURE PLANS FOR SYSTEM

The Region is changing from its present system to a VAX system. A GIS feasibility study is presently underway. Since the City of Burlington now has a WANG GIS, the Region's future GIS may have to be compatible with this system. All subdivisions on the Region's ADAPT system are coded using UTM co-ordinates for the centre of each subdivision, thus enabling future integration into a GIS.

The Region's Planning Department also plans to use Ministry of Revenue assessment rolls to a greater extent once assessment maps for Halton are updated.

METROPOLITAN TORONTO

The Metropolitan Toronto is the most populous region in the Greater Toronto Area (GTA). However, it has been experiencing population decline in recent years. Metro Toronto is situated at the centre of the GTA and subdivision development activity within its boundaries is uncommon since there is little vacant land large enough for a subdivision.

METRO TORONTO PLANNING DEPARTMENT

Development Application Monitoring

Monitoring subdivision applications is not a priority in Metro's case (there were 5 in 1989): tracking multiple unit activity is more useful (there were 90 applications in 1989). This was also true back in 1983 when the Brethour/Dillon Residential Land Inventory studies were undertaken; their research found that 85 percent of the potential units in the "registered serviced" stage of development and 47 percent of the potential units in the "draft approved" stage were made up of apartments.

Currently, the Metropolitan Toronto Planning Department does not have an automated system for tracking development applications, although funds have recently been made available for an automated system to be implemented. It is expected that this new system will be operational by the end of 1990. Thus, it will soon be possible to get the necessary development application information from the Region and separate requests or visits to each of the municipalities in Metro for the information will not be necessary.

Building Permit Monitoring

Building permits are not tracked at the regional level either. For this information, a separate visit/request to each municipality within Metro would be required. Each municipality in Metro Toronto currently has an automated building permit tracking system in place so this information should be relatively easy to compile on a regular basis.

Since building permit information is not tracked at the regional level and application monitoring is not currently automated, land monitoring information will have to be collected from the individual municipalities in Metro. Thus, the available information in each of these municipalities is discussed briefly below.

BOROUGH OF EAST YORK

East York does not currently have an automated system for tracking residential development applications. However, manual tallies are done from time to time (not on a regular basis). Overall residential development volumes are not very large in East York and it is not expected to be a very difficult task for the planning department to compile a list of current applications on a regular basis. When development applications are tracked in East York for their occasional reports, smaller residential projects and consents are not included.

Building permits are tracked on an ongoing basis by an automated system in East York's Building Department.

CITY OF ETOBICOKE

Etobicoke has a mainframe database for tracking development applications. One database tracks rezonings and another tracks site plan approvals (there was one active subdivision application in 1989). Unit potential by application is not currently part of this system; thus reports from this system would have to be supplemented by a special request that unit potential for each application be added by the planner associated with each application.

Planners at Etobicoke indicated that there were some problems with the current system and other alternatives are currently being explored.

Building permits are tracked on an ongoing basis by the building department.

CITY OF NORTH YORK

North York currently has an automated application tracking list that is updated on an ongoing basis. Information such as the owner's name, a description of the proposal, and the number of potential units (when the applicant knows this information and when space is available in the "Application Description" field) is entered into the system. This information is currently produced on a monthly basis.

Since information on unit potential is not entered consistently, North York's current *Applications List* would have to be supplemented with unit potential information from each planner in North York.

Building permit information is tracked on an automated system by the Building Department.

CITY OF SCARBOROUGH

Scarborough has an automated application tracking system called the Job Control System. This system monitors all development applications and provides information on the name of applicant, the date the application was received, the proposed use (single family, townhouse, apartment) and a few lines are available for planners comments on the project. Unit potential and stage in the planning process is not included in the Job Control system. Thus, regular reports from Scarborough would require that each planner provide unit potential and status information for each application they are involved with. In the case of Scarborough, where there has been a large number of applications in the past few years, this would probable require one or two man days of work each time the application inventory is to be updated.

Scarborough's Building Department monitors building permits on an ongoing basis in a computerized file.

CITY OF TORONTO

The City of Toronto maintains an automated application tracking system that is updated on a regular basis. The system tracks a variety of information on each application including the number of units proposed, stage of development, and applicant's name. Currently the City produces a semi-annual report outlining all major proposals. It was indicated that reports could be generated more frequently on request but that a nominal charge would be involved. It was also indicated that the data could be put into a machine readable format for use in combining with other data sources.

Building permits are monitored on an ongoing basis by the City's building department.

CITY OF YORK

The City of York has recently started a new system to be used for monitoring development applications. The system is maintained in a WordPerfect file and contains information on location, number of units, and status. It has been indicated that this information will probably be updated regularly. Because this is not a database and information is in text form, this information could not be combined with other databases.

Building permit information is updated regularly by the Building Department which currently produces quarterly reports.

MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS

The Ministry of Consumer and Commercial Relations (MCCR) is responsible for the Land Registration System in Ontario. The Real Property Registration Branch of the Ministry manages and operates the Land Registry Offices located throughout Ontario. These offices register, store, and preserve a wide variety of information pertaining to the ownership and encumbrance of real property under the Land Titles and Registration Systems.

The branch is also responsible for the development and implementation of POLARIS. POLARIS consists of an automated title record system and a mapping system. A prototype system has been developed and implemented in the Oxford Land Registry Office (the Oxford system is described in further detail in Appendix A) and further initiatives are underway in other areas of Ontario. However, land title registration systems in the GTA have yet to be automated in any manner and it appears that the whole GTA will not be automated for some years into the future.

Among the information that the Ministry collects that could be very valuable in land monitoring are the value and date of all land related transactions, legal descriptions, the address, the plan type, and title information (such as mortgages, liens and easements).

DESCRIPTION OF EXISTING LAND MONITORING

Currently, the POLARIS system contains two types of information about each parcel of land in the areas in which it is operating:

1. Legal property description.
2. A description of documents that are associated with each property.

   This includes information such as transfer documents, active plans, and other active documents.

This information is maintained in two databases:

- Graphical Database.

  This database represents each parcel where POLARIS is operating. Data is input from original deeds and surveys using coordinate geometry into an INTERGRAPH system. The Ministry also provides additional graphic property information such as reference plans, easements, expropriation plans and subdivision plans.

  The geographical referencing system used by the Ministry of Natural Resources (MNR) Surveys and Mapping Branch in producing their Ontario

Base Maps is utilized by MCCR in creating its graphical database. The MCCR mapping system outlines individual properties which are identified by a nine digit Property Identification Number (PIN).

- Tabular Database.

  This database provides on-line transactions to the automated title index that is stored on the Province's IBM mainframe computer in Toronto.

FUTURE PLANS FOR SYSTEM

Automation of the land register process in the GTA is currently underway in some municipalities. Approximately 70 percent of the City of North York has been automated and part of Scarborough has been automated as well. Expectations of the Ministry are the all of Metro Toronto will be fully digitized and automated by 1995.

In addition to work in Metro Toronto, the Ministry has been involved to some extent in GIS developments currently underway in Burlington, Oakville, and Mississauga. It is not clear at this point whether the GIS developments underway in these municipalities will lead to an automated land registry system as well, but greater ease in the interchangeability of graphics data may make this possible.

Automation of the entire GTA is very much a long-term prospect. As such, it will have little value in providing immediate results for land monitoring in the GTA, especially when one considers that the majority of the land being monitored by any system that is set up would be in the outer regions of the GTA and these will not be fully automated for some time.

Given that automation of POLARIS in the GTA is a long way off, its incorporation into a land monitoring system which could be set up relatively easily and quickly is considered to be beyond the scope of this study.

MINISTRY OF MUNICIPAL AFFAIRS

The Ontario Ministry of Municipal Affairs is responsible for overseeing the community planning process in Ontario through the approval and monitoring of a number of land related documents. This is done through the Ministry's two Plans Administration Branches (PABs) in the Community Planning Wing. In this role the branches perform the following functions:

- approve certain municipal planning applications;
- monitor the approval process where approval powers have been delegated;
- respond to queries.

Plans Administration Computer System (PACS)

In 1983, the currently operating Plans Administration Computer System (PACS) was implemented to assist the PABs in document tracking and management of the Plans Administration function. Of particular interest in terms of land monitoring, the PACS system can provide detailed information on the following types of applications:

- official plan and official plan amendments;
- plans of subdivision and condominium;
- zoning order and zoning order amendments;
- minister's consents;
- road adjustments;
- validation; and
- N.E.C. appeals.

A variety of information is collected on each application including of the following:

- application type;
- municipality;
- date received;
- application description;
- applicant name/address;
- agent name/address;
- potential units;
- registered plan no. (upon registration);
- status; and
- unit type.

Summary reports are available from the PACS system that outline the number of units at various stages of the development process by municipality for each region in Ontario. An example of the *Residential Unit Inventory* report for Durham Region is given as Attachment 1. In addition to the subdivision information shown in the Residential Unit Inventory, the PACS system could be used to produce application

MMA ATTACHMENT 1

RESIDENTIAL UNIT INVENTORY
January - December 1986
Plans of Subdivision

Region of Durham	Number of Residential Units							
	Draft Approved				Final Approved			
	Single	Semi	Town	Apt.	Single	Semi	Town	Apt.
Ajax TN	619	60	0	0	380	42	0	0
Brock TP	0	40	0	0	0	40	0	0
Newcastle TN	216	92	245	0	200	80	200	0
Oshawa CY	450	93	0	0	54	80	0	0
Pickering TN	333	84	0	0	38	60	0	0
Scugog TP	73	22	0	0	60	22	0	0
Uxbridge TP	0	14	0	0	0	10	0	0
Whitby TN	25	0	0	0	25	0	0	0
TOTAL	1716	405	245	0	757	334	200	0

specific information by municipality that would show the date at which the application reached each stage of the approvals process.

As currently configured, the PACS system can track all subdivisions and all multiples for which an official plan amendment is required through the approvals process. However, the system would fail to provide any information on dwelling units for which the official plan is in place and only rezoning is required; for these units, only a building permit is required for development.

Potential Use of PACS in Land Monitoring

Advantages

It would appear, given the above description, that the PACS system could provide much of what is being sought in a land monitoring system in the GTA. As it is, the system can provide:

- unit potential by dwelling type, by application, by stage of development, and by municipality for the GTA;
- the time it takes for each application to proceed through the development process; and
- ownership information by application.

As well as providing a great deal of the information requested in the terms of reference for this study, the PACS system would meet the criteria of using existing surveys and control processes to the maximum extent possible.

In order to be of use, this information would have to be supplemented by building permit information so that lots with permits issued on them could be subtracted from the inventory of vacant lots in registered subdivisions. However, this is also true for the subdivision information available from many of the regional planning departments in the GTA.

Disadvantages

In spite of all the advantages that the PACs system would appear to have for land monitoring, there are some important disadvantages. One is that the timing and quality of the information provided to the Ministry will vary by region. In the case of Metro Toronto, for example, the Ministry was only receiving annual reports from the Regional Planning Department up until 1988; the Regional Planning Department has not submitted anything to the Ministry for 1989 (there were about 90 multiple applications and 5 subdivisions in Metro in 1989).

Another problem with the PACS system is its lack of flexibility. Currently, information on the number of lots in a subdivision is not tracked (just the number of units) and the area of the subdivision is also not available, making it more difficult to add on to the PACS system if further information on land monitoring is required. As well, because of the systems setup/design, generating non-standard reports is costly at the present time.

Problems with the data quality in the PACS system were also brought out in a 1987 report by Stevenson Kellogg Ernst & Whinney. Surveys with planners in the Ministry revealed that many had serious concerns with the completeness and quality of the data. Although there may be problems with incorrect data, it is not clear at this point how serious these problems would be with respect to the relevant data for land monitoring.

Finally, data on subdivisions and apartments is not longer being entered into PACS in some of the Regions in the GTA (Halton, Metro, and Peel specifically). Approval authority has been delegated to the Regions in these areas, and little value is seen currently in having the Ministry monitor these approvals. Thus, use of the PACS system for land monitoring would require that the Ministry recommit the necessary resources for ongoing monitoring of this information.

Housing Policy Statement Monitoring System (HPSMS)

The Ministry of Municipal Affairs is in the process of developing a Housing Policy Statement Monitoring System (HPSMS) which will supplement some of the housing development data available via PACS. The proposed system differs in that it focuses on development activity pertaining to "affordable housing". Essentially, the system is designed to aid Ministry staff in monitoring municipal compliance and implementation of Ontario's Policy Statement on Land Use Planning for Housing. It will be used as a key source of data concerning the number and type of affordable housing units being proposed and/or developed in municipalities throughout the Province.

The HPSMS is currently being developed using ORACLE relational database software and will be comprised of four separate modules, namely: *Development Approval Status Log* (DASL); *Official Plan Conformity Log* (OPCL); *Zoning By-law Conformity Log* (ZBCL); and *Priority Area Status Log* (PASL). The purposes of the logs are as follows:

> **Development Approval Status Log (DASL):** Will monitor the status of residential subdivision/condominium applications with emphasis on the number of *"affordable housing"* units being generated under this process. The DASL will also record the number, type, tenure, affordability, and average processing time of these subdivision/condominium applications.
>
> **Official Plan Conformity Log (OPCL):** Will monitor housing-related official plans and amendments to determine their conformity to the policy statement. In particular, the OPCL will describe the type of OP/OPA in terms of the requirements outlined in the policy statement, as well as, calculating average

processing time in accordance with *"streamlining"* objectives. Where applicable, estimates of residential unit counts will also be included.

Zoning By-law Conformity Log (ZBCL): Will function similar to the OPCL, but the monitoring will apply to housing-related comprehensive/major zoning by-laws; the intent again being to determine their conformity to the policy statement.

Priority Area Status Log (PASL): Will monitor compliance with the *"due date"* provisions outlined in the policy statement by all municipalities situated in *"priority areas"* (i.e., the Regional municipalities of Durham, Halton, Hamilton-Wentworth, Metro Toronto, Niagara, Ottawa-Carleton, Peel, and York, as well as Census Metropolitan Area of London and Windsor).

As it is currently conceived, the HPSMS has potential to become an important source of data for a land monitoring system in the GTA. A great deal of the base information required in a land monitoring system will be available through it, such as the development status, unit potential, dwelling type, land area, and average processing time for subdivisions. As well, the system will cover housing-related official plans and amendments; something not currently being monitored at the regional level. Also, because the system is being designed in an ORACLE environment, there should be little difficulty in generating non standard reports; making it much more flexible than the current PACS system.

In conclusion, even though the coverage for the HPSMS will be Ontario-wide, its design features could be used as a starting point in the development of a land monitoring system for the GTA. Selection of new system specifications would obviously have to be undertaken and substantial development resources acquired. High level discussions would also have to take place to determine responsibility for systems development, selection of systems architecture, data collection/reporting, administration, on-going maintenance, etc.

BRETHOUR/DILLON ATTACHMENT 1

RESIDENTIAL DEVELOPMENT INVENTORY
MARCH, 1983

Municipality: Toronto Commutershed Summary

Planning District	Project Status	Detached							Semi-detached Total	Townhouse Total	Apartments Total	All Units Total
		7.5m (25')	9.2m (30')	10.7m (35')	12.2m (40')	13.7m (45')	15.2m (50')	18.2m (60')				
East	Draft Approved	104	1195	356	1819	1761	3229	350	2951	669	646	13,080
	Registered Unserviced		68		60	55	348	10	160	17		718
	Registered Serviced	37	12	44	275	187	588	132	193	203	383	2054
Central	Draft Approved	539	1719	784	1261	1733	3834	784	1191	1831	5791	19,467
	Registered Unserviced			16	103	60	166	261	205			811
	Registered Serviced	365	715	461	408	1008	2290	293	729	619	5027	11,915
West	Draft Approved	22	1389	83	1597	1190	5359	1357	2558	2188	5914	21,657
	Registered Unserviced				42	4						46
	Registered Serviced	2	503	189	741	235	1437	629	1424	2074	10,225	17,459
Total Toronto	Draft Approved	665	4303	1223	4677	4684	12,422	2491	6700	4688	12,351	54,204
	Registered Unserviced		68	16	205	119	514	271	365	17		1,575
	Registered Serviced	404	1230	694	1424	1430	4315	1054	2346	2896	15,635	31,428

BRETHOUR/DILLON RESIDENTIAL LAND INVENTORY

In 1983, the Ministry of Municipal Affairs and Housing, together with the Toronto Home Builders' Association, commissioned the consulting team of Brethour Research Inc. and M.M. Dillon Limited to undertake a study of the vacant residential land inventory in the Greater Toronto Area (then 19 municipalities as opposed to 30). Two *Residential Land Inventory* studies were undertaken as a result of this initiative.

The purpose of the two reports was to produce the following:

- Existing and planned land inventories (unit potential) in the GTA by:

  -registered vacant serviced lots/units
  -registered vacant unserviced lots/units
  -draft approved lots/units
  -single detached lots by front footage

- Vacant registered unit potential and draft approved unit potential by unit type and municipal planning district; and

- A map showing the number of units by planning stage and type in each planning district in the GTA.

Attachment 1 shows the summary chart for the GTA for the first of the two reports.

Certain aspects of the Brethour/Dillon research may be of interest for this study are discussed further in the sections that follow.

Lot Size

Information on single-detached lot size for both draft approved and registered subdivisions was gathered for these reports through an examination of each subdivision plan at each municipality. This is a fairly labour intensive task. To fully summarize this information for the GTA with its current 30 municipalities would take about 40-50 person-days as a rough estimate; a visit to each municipality would be required and about 1.5 person-days of time would be needed to examine all subdivisions in each municipality and compile the information.

Lot size information for registered and draft approved projects would be particularly useful for estimation of the value of housing coming on stream in the GTA; large lots will normally be associated with more expensive housing and small lots with more affordable housing.

BRETHOUR/DILLON ATTACHMENT 2

*LOT VALUES WITHIN THE
TORONTO COMMUTERSHED
1978 - 1984

LOCATION	1978 MAR.	1979 MAR.	1980 MAR.	1981 MAR.	1981** MAY	1982 MAR.	1982** AUG.	1983 MAR.	1984 MAR.	PERCENTAGE CHANGE 1979 - 1984
OSHAWA	500	500	500	560	525	500	500	500	600	20%
WHITBY	550	575	575	575	600	575	550-600	550-600	600-650	9%
AJAX	650	700	700	700	700	700	700-750	700-750	700-750	4%
PICKERING	900	900	800	950	1100	1000	900	850-900	850-1000	3%
SCARBOROUGH	900	1050	1200	1300	1450	1350	1000-1150	1100-1250	1100-1500	
ROUGE									1150-1250	
MILLIKEN									1350-1500	
MALVERN									1100-1200	29%
MARKHAM										
VILLAGE	850	850	850	950	1400	1100	1000	800	1100-1200	35%
UNIONVILLE	800	1050	1100	1400	1500	1350	1100	1000	1250-1350	24%
THORNLEA	900	1100	1250	1400	1800	1500	1200	1250-1450	1400-1600	36%
NEWMARKET	500	460	460	500	600	550	550	500	600	30%
AURORA	-	-	500	550	650	600	600	600	750-800	55%
RICHMOND HILL	900	900	900	1000	1150	1100	1000	1000	1400	56%
VAUGHAN-THORNHILL	900	1200	1250	1350	1500	1350	1100-1200	1100-1200	1400-1600	25%
WOODBRIDGE									1000-1200	-
BRAMPTON	750	750	750	800	950	900	800-900	800-900	850-950	20%
MISSISSAUGA										
BURNHAMTHORPE	800	900	1050	1150	1300	1150	1000	900-1000	1250-1400	47%
ERIN MILLS	800	900	900	1000	1100	1050	900	900-1000	950-1050	11%
OAKVILLE	750	750	725	800	950	900	750-850	750-850	850-925	18%
BURLINGTON	600	600	550	650	700	700	650-675	600-650	700-750	21%

** N.B. Due to the significant fluctuations in land prices, *May 1981 and *August 1982 have been included for comparison.

* Values are stated on a per front foot basis.

Sales Price Information

Average lot prices on a per front foot basis by municipality were provided in the report for March of each year from 1978 to the time of each report's completion. A copy of the lot value summary table from the second of the two reports is included as Attachment 2.

This information was gathered through discussions with realters familiar with lot prices in various municipalities and from readily available data in Brethour Research's land price data bank. As it was done for the Brethour/Dillon reports, the lot price information was very much a supplementary exercise.

This type of information is still being gathered by firms such as Brethour Research and Trillion Management Corporation and it is likely a similar lot price summary could be provided by these firms. Estimated cost for such a summary from these firms would be about $750 for each time the table was compiled.

Vacant Lots Available For Sale

To clear lots from the residential development inventory, information on both land registry information and building permits was utilized in this study. Lots for which any title or interest had been transferred to a new home consumer were subtracted from the registered lot inventory. As well, lots for which any building permit had been issued were also subtracted from the registered lot inventory. The result was an inventory of lots which would approximate all lots available for sale at the time the inventory was taken.

Collection of this information required an analysis of all building permit information by application, and a visit to each land registry office to determine which remaining lots had been sold to new home consumers. Most municipalities and some of the Regions now have automated building permit tracking systems which would likely make collecting or compiling this information much easier today. However, collection of title information today would involve the same procedure as the past and is a fairly labour intensive process.

Although it can happen that there are lots which have been sold to a new home consumer for which no building permit has been issued, these instances are relatively rare and collection of both building permit information and land title information would seem to be redundant. Given that building permit information is readily available, its use would seem to suffice in clearing lots from the registered lot inventory.

Servicing

The reports provided a breakdown of the number of registered lots/units which had been fully or partially serviced, and the number that had not been serviced.

The collection of this information was a highly labour intensive task; it required 60 man days from six people. These people would have to visit each municipality and, through lengthy discussions with public works personnel, compile information on which lots had been serviced.

If this information were to be collected today, it would require essentially the same procedure, only there were would now be a greater number of municipalities (30 rather than 19). Thus, another two people would probably be needed for two months in addition to the six used in the Brethour/Dillon research to complete this task for the GTA today.

Looking back on this analysis, it is not clear why such a large expense was incurred to collect this information. In December of 1983, for example, only 1,505 or 4 percent of the total number of registered lots available for sale (36,696) in the GTA did not have servicing. As well, by the nature of servicing agreements between developers and municipalities in the GTA, it is usually the case that once a subdivision is registered, servicing is imminent.

Thus, collection of servicing information at the registered stage in development provides little insight into potential servicing constraint/bottleneck problems in any given area or in the GTA.

APPENDIX C

NON-RESIDENTIAL LAND MONITORING IN THE GTA

INTRODUCTION

Although the primary focus of this study has been on residential land monitoring, a complete land monitoring system would also cover non-residential land as well. This appendix provides a review of the various types of non-residential land monitoring being done by each of the four outer regional municipalities in the GTA (Metropolitan Toronto does not monitor vacant non-residential land on an ongoing basis). Since non-residential land does not go through a subdivision approvals process as commonly as residential land, the bulk of vacant non-residential land cannot be monitored via an application tracking system as is being done for residential land in the outer regions; monitoring this land requires use of assessment maps and field surveys and is thus more costly to produce on a regular basis.

Industrial land is monitored in each of the four outer regions of the GTA to varying degrees of detail. While the Regions of Durham, York, Peel and Halton all provide planning status, land area and owner information for all (industrial, commercial, etc) land in the subdivision application approval process, only the Region of Durham collects and provides information on all vacant designated industrial land. Thus, if an industrial land monitoring system were to be set up in conjunction with a residential land monitoring system, it would require that additional resources be made available in each of the regions to estimate the total vacant industrial land area, as opposed to those parcels in the subdivision approvals process.

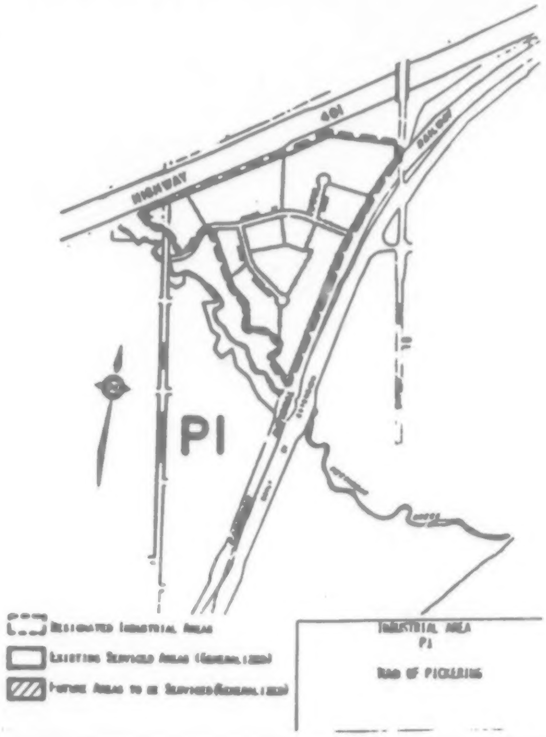
The following sections summarize the non-residential land monitoring efforts that are currently underway in each of the outer regions of the GTA.

ATTACHMENT 1

DISTRIBUTION OF DESIGNATED AND VACANT SERVICED INDUSTRIAL LAND
BY INDUSTRIAL LAND
YEAR-END 1988 (ACRES)

	Industrial Area	Designated	Vacant Serviced
	A-1	610	0
	A-2	62	0
	A-3	79	0
	A-4	852	20
	A-5	386	0
Ajax	Total	[illegible]	20
	P-1	70	30
	P-2	1856	150
	P-3	57	10
	P-4	2174	0
Pickering	Total	[illegible]	190
	W-1	1843	183
	W-2	33	0
	W-3	90	0
	W-4	19	0
Whitby	Total	[illegible]	[illegible]
	O-1	1387	60
	O-2	713	90
	O-3	61	0
	O-4	79	0
Oshawa	Total	[illegible]	150
	N-1	626	227
	N-2	92	0
	N-3	254*	3
	N-4	105	0
	N-5	2	0
	N-6	2	0
	N-7	441	0
Newcastle	Total	[illegible]	230
	S-1	990	0
	S-2	67	0
Scugog	Total	1057	0
	B-1	31	0
	B-2	30	18
	B-3	66	0
	B-4	28	0
	B-5	229	0
Brock	Total	387	18
	U-1	80	0
	U-2	20	0
	U-3	10	0
Uxbridge	Total	110	0
	TOTAL	13400	730

NOTE. Acreage Figures are not rounded.
* Includes 94 acres of Industrial land within Woodlands Community and Town Centre of Pickering.
** Excludes 700 acres for St. Mary's Cement.


HIGHWAY 401
P1
DESIGNATED INDUSTRIAL AREAS
EXISTING SERVICED AREAS (GENERALIZED)
FUTURE AREAS TO BE SERVICED (GENERALIZED)
INDUSTRIAL AREA
P1
TOWN OF PICKERING

DURHAM REGION

Durham Region monitors applications for the development of industrial and commercial land on its Development Application Tracking System (Plans of Subdivision/ Condominium and consent applications). Often development applications do not require land to be subdivided, and so Official Plans, Zoning By-Laws and Amendments are included to get a complete picture of vacant industrial and commercial land in the Region.

For both industrial and commercial land in the development approvals process, the following land characteristics are monitored:

- Planning status;
- Land area; and
- Owner name.

Each year, Durham Region reports on the supply of vacant industrial land in each identified industrial area in the "Supply Servicing and Financing Study for Industrial Lands". This survey includes industrial land for which subdivision is not required. The Regional Official Plan, the Property Data System and building permit monitoring system are used to identify all vacant industrial land in the Region. Official Plan and Zoning By-Law Amendments are also used for this exercise.

The vacant land area that is designated for industrial use is specified along with the vacant serviced land area within each industrial area of each municipality. Attachments 1 and 2 illustrate some of the information available on vacant industrial land for Durham Region. Other issues dealt with in this annual report include the rates of industrial land absorption by municipality, the forecasted demand for serviced industrial land by municipality, and the estimated water, sewer and road servicing costs relating to industrial lands for a ten-year period.

Eventually, the Region would like to incorporate information on employment activity for existing industrial land and the use of industrial codes (to identify industry type) into the annual industrial land survey.

ATTACHMENT 2

Table 3-1

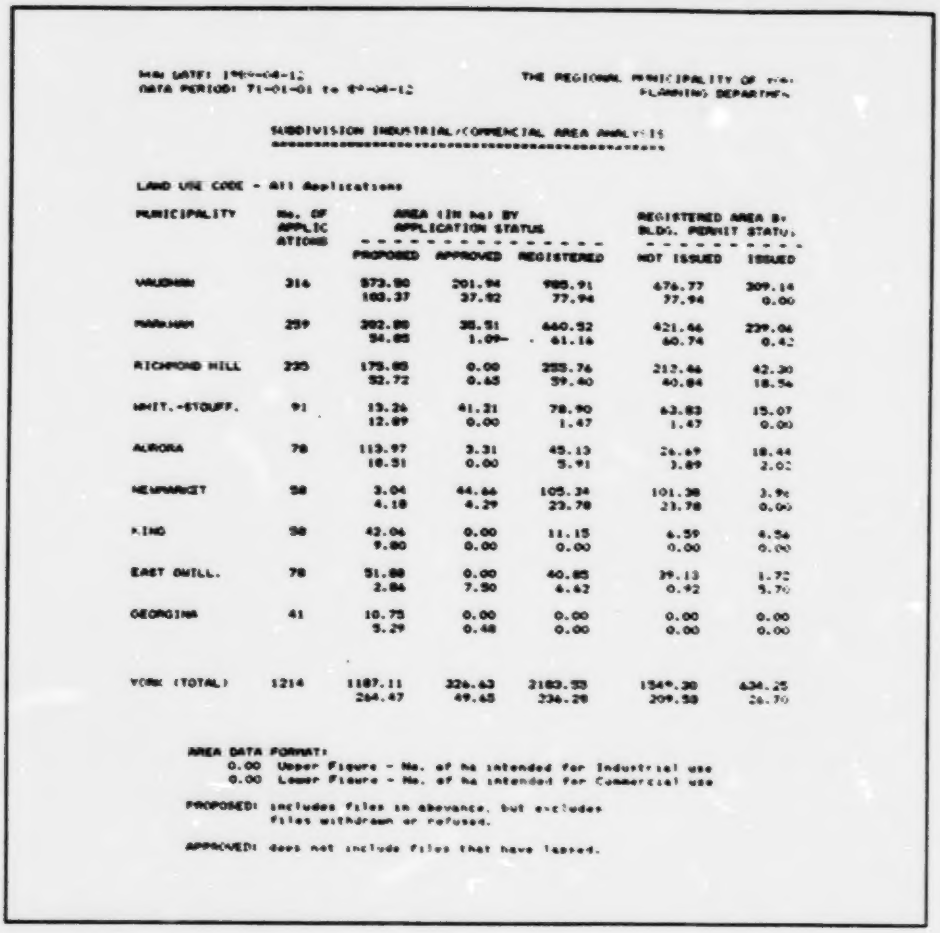
Distribution of Designated Inudstrial Land by Area Municipality

Year-End 1988 (Acres)

Classification	Area Municipality								Durham
of Land	AJ	NE*	OS	PI	WH	BR	SC	UX	Total
Designated	1640	1380	2200	3660	1950	380	1050	120	12380
Hazard Lands	140	120	120	140	230	0	100	0	850
Occupied									
Utilized	780	270	1320	610	640	50	70	40	3780
Under-Utilized	0	70	140	250	340	20	50	10	880
Sub-Total	780	340	1460	860	980	70	120	50	4660
Vacant	720	920	620	2660	740	310	830	70	6870
(i) Developable on Full Services									
Serviced	20	230	100	190	180	20	0	0	740
Unserviced	700	380	520	2470	560	210	0	20	4860
Sub-Total	720	610	620	2660	740	230	0	20	5600
(ii) Developable on Partial Services	0	0	0	0	0	20	0	0	20
(iii) Developable on Private Services	0	310	0	0	0	60	830	50	1250

*Excludes 700 acres for St. Mary's Cement

ATTACHMENT 1



RUN DATE: 1989-04-12
DATA PERIOD: 71-01-01 to 89-04-12

THE REGIONAL MUNICIPALITY OF YORK
PLANNING DEPARTMENT

SUBDIVISION INDUSTRIAL/COMMERCIAL AREA ANALYSIS

LAND USE CODE - All Applications

MUNICIPALITY	No. OF APPLIC ATIONS	AREA (IN ha) BY APPLICATION STATUS			REGISTERED AREA BY BLDG. PERMIT STATUS	
		PROPOSED	APPROVED	REGISTERED	NOT ISSUED	ISSUED
VAUGHAN	316	573.50 103.37	201.94 37.82	985.91 77.94	676.77 77.94	309.14 0.00
MARKHAM	259	202.80 54.85	35.51 1.09-	660.52 61.16	421.46 60.74	239.06 0.42
RICHMOND HILL	235	175.85 52.72	0.00 0.65	255.76 59.40	212.46 40.84	42.30 18.56
WHIT.-STOUFF.	91	13.26 12.89	41.21 0.00	78.90 1.47	63.83 1.47	15.07 0.00
AURORA	78	113.97 10.51	3.31 0.00	45.13 5.91	26.69 3.89	18.44 2.02
NEWMARKET	58	3.04 4.18	44.66 4.29	105.34 23.78	101.38 23.78	3.96 0.00
KING	58	42.06 9.80	0.00 0.00	11.15 0.00	6.59 0.00	4.56 0.00
EAST GWILL.	78	51.88 2.86	0.00 7.50	40.85 6.62	39.13 0.92	1.72 5.70
GEORGINA	41	10.75 5.29	0.00 0.48	0.00 0.00	0.00 0.00	0.00 0.00
YORK (TOTAL)	1214	1187.11 264.47	326.63 49.65	2183.55 236.28	1549.30 209.58	634.25 26.70

AREA DATA FORMAT:
0.00 Upper Figure - No. of ha intended for Industrial use
0.00 Lower Figure - No. of ha intended for Commercial use

PROPOSED: includes files in abeyance, but excludes
files withdrawn or refused.

APPROVED: does not include files that have lapsed.

YORK REGION

York Region monitors development applications for industrial and commercial land on its monitor of subdivision applications. The plans are tracked through the development approvals process from the proposed through the registered stages. The following land characteristics are monitored:

- Planning status;
- Land area; and
- Owner name.

The Region provides a summary table of these applications by municipality. It also differentiates this land into either built or unbuilt categories based on assessment information. Attachment 1 illustrates this summary information.

ATTACHMENT 1

DRAFT APPROVAL AND REGISTRATION OF INDUSTRIAL PLANS OF SUBDIVISION IN PEEL REGION
BY AREA MUNICIPALITY: JANUARY 1 - JUNE 30, 1982 - 1989

TABLE 1

MUNICIPALITY	1982	1983	1984	1985	1986	1987	1988	1989	% CHANGE 1988-1989
PEEL REGION									
DRAFT APPROVED IND. PLANS OF SUBD. (HA)	64	0	9	219	186	190	258	143	-45
REGISTERED IND. PLANS OF SUBD. (HA)	176	6	116	91	61	28	95	215	126
MISSISSAUGA									
DRAFT APPROVED IND. PLANS OF SUBD. (HA)	47	0	0	116	88	190	258	130	-50
REGISTERED IND. PLANS OF SUBD. (HA)	170	6	53	91	38	28	95	196	106
BRAMPTON									
DRAFT APPROVED IND. PLANS OF SUBD. (HA)	17	0	9	103	98	0	0	0	N/A
REGISTERED IND. PLANS OF SUBD. (HA)	0	0	63	0	23	0	0	19	N/A
CALEDON									
DRAFT APPROVED IND. PLANS OF SUBD. (HA)	0	0	0	0	0	0	0	13	N/A
REGISTERED IND. PLANS OF SUBD. (HA)	6	0	0	0	0	0	0	0	N/A

NOTE: HA = Hectares of Draft Approved/Registered Industrial Plans of Subdivision.

Prepared by the Socio-Economic Analysis Section (SEAS) of the Region of Peel Planning Department.

Source: Region of Peel Planning Department, Subdivision Plan Records, January - June, 1982 - 1989.

JFC 1989

PEEL REGION

Peel Region monitors development applications for industrial land in the Draft Approved and Registered stages on its Development Control Inventory. The Region also tracks building permits issued for both industrial and commercial construction on its Build Files. SGU codes are added to each record.

Information tracked on industrial plans of subdivision in the Draft Approved and Registered stages includes:

- Planning status;
- Land area; and
- Owner name.

An example of some of the information provided is attached as Attachment 1.

Building permit information tracked for both industrial and commercial construction includes:

- Number of permits issued;
- New building value in $000s; and
- Total value added in $000s (includes new buildings, expansions and alterations).

An example of the information contained in the Build Files for non-residential development activity is attached as Attachment 2. Other information tracked on industrial and commercial land using the Build Files includes the area of vacant floor space.

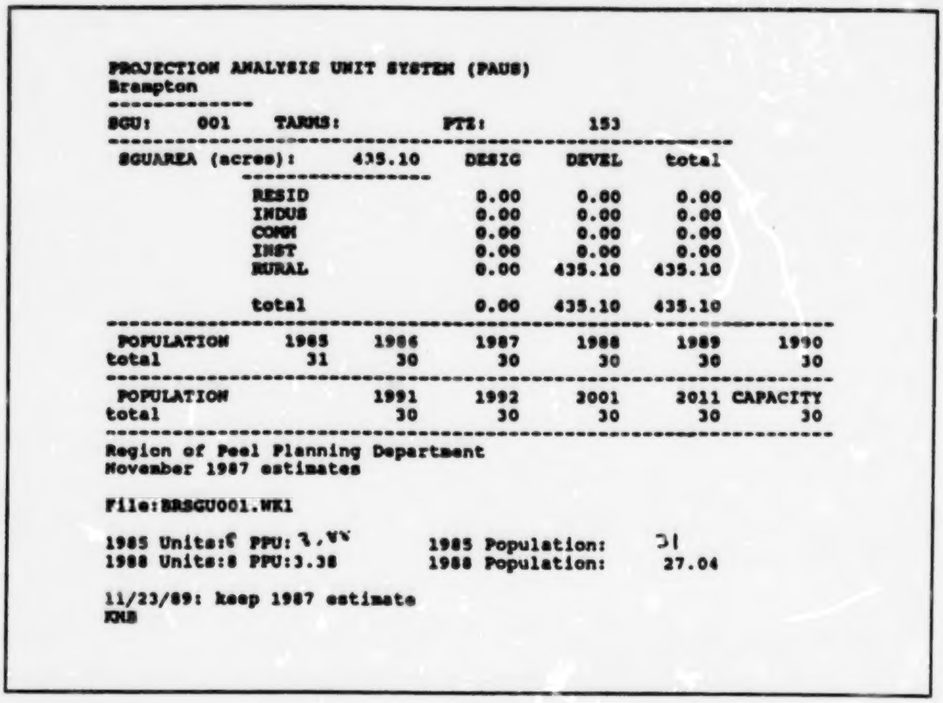
Also, PAUS gives an estimate of the vacant land that is designated for industrial, commercial and institutional uses. This is largely based on aerial photography and the total designated land would include vacant land in the development approvals process as well as inactive land. Attachment 3 illustrates this information.

ATTACHMENT 2

[illegible]

[illegible]

ATTACHMENT 3



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PROJECTION ANALYSIS UNIT SYSTEM (PAUS)
Brampton
-------------
SGU:    001    TARMS:          PTZ:          153
------------------------------------------------------------
 SGUAREA (acres):       435.10      DESIG      DEVEL     total
                 -----------------
                 RESID                0.00       0.00      0.00
                 INDUS                0.00       0.00      0.00
                 COMM                 0.00       0.00      0.00
                 INST                 0.00       0.00      0.00
                 RURAL                0.00     435.10    435.10

                 total                0.00     435.10    435.10
--------------------------------------------------------------------------
 POPULATION        1985      1986      1987      1988      1989      1990
total                31        30        30        30        30        30
--------------------------------------------------------------------------
 POPULATION                  1991      1992      2001      2011  CAPACITY
total                          30        30        30        30        30
--------------------------------------------------------------------------
Region of Peel Planning Department
November 1987 estimates

File:BRSGU001.WK1

1985 Units:8 PPU:3.88          1985 Population:      31
1988 Units:8 PPU:3.38          1988 Population:      27.04

11/23/89: keep 1987 estimate
KMB
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ATTACHMENT 1

REGIONAL MUNICIPALITY OF HALTON

SUBDIVISIONS RECEIVED/DRAFT APPROVED REGISTERED 1983-1988

	RECEIVED APPLICATIONS				DRAFT APPROVED APPLICATIONS				REGISTERED APPLICATIONS			
	NO.	RES. UNITS	IND. HA	COM. HA	NO.	RES. UNITS	IND. HA	COM. HA	NO.	RES. UNITS	IND. HA	COM. HA
1983	20	1279	60.2	3.5	21	1470	10.5	0.3	25	1138	13.2	6.8
1984	24	2980	29.6	2.8	17	1233	30.3	4.4	27	2083	0	0.8
1985	31	3960	38.0	0	22	1974	10.1	1.6	29	2462	0	15.5
1986	43	9691	177.5	14.8	43	3933	40.0	1.1	39	3709	21.7	1.4
1987	41	6022	277.1	47.8	27	3739	47.3	28.5	41	3926	23	28.9
1988	47	3164	290.7	22.9	29	2746	211.8	27.6	38	2876	236.4	8.9

HALTON REGION

Halton Region monitors development applications for industrial and commercial land using the ADAPT system. Only subdivision applications are used for these purposes. The plans are tracked through the development approvals process from date received to registration. The following land characteristics are monitored:

- Planning status;
- Land area; and
- Owner name.

The Region does not follow building permit data for registered industrial and commercial land.

Attachment 1 summarizes Halton's industrial and commercial subdivision application information.

APPENDIX D

GLOSSARY

Geographic Information System	usually deal with geographically related information and data or with attributes that can be given geographic locations; well-noted for exposing relationships from attributes and data that are not usually related by presenting them in a spatial context, often in the form of a computer map; generally consist of three components - i) special software and/or hardware designed to perform spatial analyses; ii) tabular, non-graphic data presentation; and iii) computer generated graphics capabilities used to make digital pictures (computer maps). GIS is able to manipulate, analyze, and display geographic and map-related data, and allows one to alter a map situation easily and overlay data.
Geo-referencing	The addition of a location identifier to a point, arc, or polygon (shape) on the computer; through this location value, a GIS can spatially relate each of it's features.
Inactive land	In the context of this project, refers to land which has been designated for development but which has not had a development application submitted for it.
Infill land	Vacant, unused small parcels of land in built-up urban areas that have been bypassed by the development process for one reason or another.
"In process" land	In the context of this report, refers to land in the early stages of the planning process; refers to land which has a submitted, or received, plan of subdivision which needs to be draft approved.
Intensification	In the context of urban development, the process of increasing the density of land use on existing parcels of urban land; maximizing the use of underutilized land within the limits of the existing zoning bylaws.
Land area	A measurement of the land surface included within a set of linear boundaries; usually given in hectares or acres.

Cadastral	An official register of the quantity, value, and ownership of property used in apportioning taxes.
Committee of adjustment, Land division committee	A committee of adjustment is appointed by a municipal council and has the power to authorize minor variances from land uses permitted by zoning by-laws and the power to grant consents to divide land. A land division committee is the same, except that it operates in a county or metropolitan, regional, or district municipality.
Consent, severance	Under certain circumstances, if a landowner wishes to divide a parcel of land so that part of the original parcel can be sold as a separate lot, he may be able to secure approval (from a committee of adjustment, a land division committee, or the Minister of Housing, depending on where the parcel is located) for what is know as a severance or a land separation consent. Thus, consents and plans of subdivision are alternative methods of approval of division of land.
Database	A collection of inter-related information; in a GIS context, includes data about the position and the attributes of geographical features that have been coded as points, lines, areas, pixels or grid cells.
Digitize	To encode map co-ordinates in digital form; all data entered onto any computer, including computer graphics lines, must be in the form of number if the computer is to do anything to it; data can be as varied as actual numerical data or numeric codes for different map symbols, colours, or images.
"Draft Approved" land	In the context of this report, refers to land in the planning process for which a submitted plan of subdivision has been approved in principle by the respective municipal or regional council; developer must comply with conditions imposed by council before plan receives final approved and can be registered.
Geocoding	The activity of defining the position of geographical objects relative to a standard reference grid.

Land monitoring system	In the context of this project, a means of following various parcels of land through the urban development process.
Lot sizes	In the context of this project, a measurement of the area of individual lots within plans of subdivision.
Lot frontage	In the context of this project, a measurement of the length of lot edges fronting on streets or roadways; particularly useful for determining the cost of municipal servicing requirements.
Official Plan	A document adopted by a municipal or regional council and approved by the Ministry of Housing which states, usually in general terms, development objectives and planning policies for the municipality or region and, typically, designates future uses of land in different areas, sometimes with an indication of the location of future transportation and servicing facilities and the timing of development. Unless amended, land use designations are binding on the municipal or regional government, because the Ontario Municipal Board and courts require conformity of by-laws and public works with the official plan.
Owner name	In the context of this project, the name of the legal owner of a parcel of land or property, usually determined from submitted subdivision/condominium applications or, for inactive land, from the year-end assessment file.
Ownership type	Generally differentiates between private and public sector ownership of a given parcel of land.
PACS	Refers to the Plans Administration Computer System used by the Ontario Ministry of Municipal Affairs; a computerized system used in the approval of applications, monitoring of approvals, and responding to queries.
Parcel	In the context of this project, refers to an individual piece of land; depending on the planning status of the land being measured, and the characteristics of land monitored, can refer to individual properties or an aggregate set of properties.

Plan of subdivision	If a landowner wishes to divide a parcel of land so that a number o lots can be sold to different parties, he must secure approval from he Ministry of Housing for what is known as a plan of subdivision.
Planimeter	To digitally trace the boundary of a polygon; for example, a property or parcel of land.
POLARIS	A computerized mapping and tabular database used by the Ontario Ministry of Consumer and Commercial Relations; computerized mapping database represents each land parcel as input from original deeds and surveys using co-ordinate geometry; tabular database provides on-line transactions of all land title documents.
Population potential	In the context of this project, it represents an estimate of the maximum number of residents which could be expected to inhabit a given plan of subdivision/condominium or parcel of land once fully developed.
Raster	Used in a GIS context, a regular grid of cells covering an area.
Redevelopment	In the context of land development, refers to the partial or complete demolition of existing land uses on a given parcel of land, and the subsequent development of new land uses.
Registered Plan of Subdivision	A plan of subdivision which has been given the go-ahead for building permits to be issued for individual lots.
Servicing status	Refers to the status of land servicing (sewer/water); servicing capacity and infrastructure must first be allocated, then this infrastructure must be supplied to the subject subdivision, at which point the developer must provide the internal servicing with the provision of servicing connections to individual lots.
Severance	See Consent, severance.

Single-Line Road Network	This is how roads are often displayed on a GIS. Rather than digitizing and storing the curbed-edges on both sides of roads, many times the road will be stored merely as a line down its centre, with the addresses attached to it at the centre of each property on it. The width and quality of the road are also stored, so that a map can be produced or applications can be done.
Subdivision	See plan of Subdivision.
Topology	The way in which geographical elements are linked together; relates to the adding of spatial and geographic information to points that had none before.
Unit/dwelling type	Refers to a type of residential unit; the CMHC classifications of single-detached, semi-detached, row and apartments are commonly used.
Unit Potential	Refers to the maximum number of residential units (dwellings) which could be accommodated on a given piece of land; this is often determined using the density standards set in the municipal zoning by-law.
Zoning By-Law	The document used by a municipality to specify what land uses are allowed on land parcels within its jurisdiction; also can regulate such things as building size and location within a property, and specify conditions which must be adhered to when developing a parcel of land.